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December 2, 1943

Mr. William Miller
Higley, Arizona

Re: Mammoth-Tiger Extension Mine

Dear Sir:

I am enclosing herewith two copies of my report on your property at Mammoth and I am sincerely sorry that the result of my investigation was not more favorable. I am afraid that you and your associates were misled at the outset by representations made by Baird or others and if a thorough investigation had been made at that time I doubt if you would have felt it wise to invest in the stock of the Tiger Extension Mining Company.

At present neither Mr. Holderness nor Mr. Ward can give much encouragement concerning the future of this mine and I am sorry to say that my own opinion is extremely unfavorable as you will gather from the report.

It is unfortunate that the ladders were in such shape that I could not visit all of the underground workings, but I saw quite enough to satisfy me that my conclusions are correct and these were confirmed by others who have made a more thorough investigation.

As to the possibility of doing any business with the Mammoth-St. Anthony Company this seems to be entirely out of the question under present conditions and very unlikely to materialize at any time in the future. If Ward can find a competent leaser to take over your mine there is a remote chance that something worthwhile may be developed and that the showing would be more attractive to the St. Anthony people or others, but I am seriously afraid that nothing of this kind is likely to happen, and otherwise it seems to me that you can only proceed to liquidate the company or at least to distribute whatever assets it may hold and which the Government will release from their lien for your benefit.

I shall be only too glad to discuss this matter with you personally any time that you are in Phoenix. However, I cannot think of anything worthwhile to suggest at present.

I am enclosing a statement of my account. I shall be very glad to be of any further assistance if you can think of any other solution of this problem.

With personal regards, I am

Very truly yours,

GMC/b
Enclosures 3

P. S. Delay in completing and sending this report is due to the fact that I wished to discuss the mine with Mr. Maitland, the R.F.C. Engineer who made the final examination, and he was out of town until this morning.

Maitland very kindly showed me the assay maps which they had prepared and gave me full information concerning his findings and opinions which were entirely similar to mine.

Please let me know whether you wish to have me return the maps and papers that you turned over to me, or if you prefer to have me retain these for the present on the chance that I may be able to use them to advantage.

December 2, 1943

STATEMENT OF ACCOUNT

William Miller

and

G. M. Colvocoresses

To Examination and Report on Ford Mine of Mammoth-Tiger Extension Mining Company

Fee as per agreement	$250.00
Less payment by check 11/16	100.00
Balance	$150.00

Received Payment:

January 5th. 1945

Mr. William Miller
Higley, Arizona

Re: Mammoth-Tiger Extension Mine

Dear Mr. Miller:

You will recall that I examined this property on your behalf toward the end of 1943 and was obliged to make a rather unfavorable report.

However, you have probably noticed in recent daily papers that the Magma Copper Company of Superior have taken an option on a large block of ground lying in the vicinity of the Mammoth-St. Anthony Mine and are drilling this in conjunction with the U. S. Government to develop a large body of disseminated low grade copper ore which may eventually form the basis for a very extensive mining operation.

I have checked over my file on the Mammoth-Tiger property and do not find that any similar formation appeared to exist on your property, but I do recall that going up Tucson Wash and in the direction of the new Magma Company development there was a large out-crop of iron-oxide material which might well cover a disseminated copper ore body and a portion of which may have extended over into your mining claims.

Even though there may be no immediate possibility of developing copper ore on your ground, it is very often the policy of large companies like the Magma to take over under option a great deal of outlying territory which may be useful to them at some future time, and it has occurred to me that it might be worth your while to approach the manggement of the Magma and sound out the possibility of their being interested in your holdings.

Since I know these people quite well personally and visit their office from time to time, I will be very glad indeed to be of any assistance along these lines provided you desire to have me make such an approach, and assuming as I do that you are still interested in the Mammoth-Tiger Mining Claims and that these have been kept in good standing.

I hope that you have had a successful year with your agricultural activities and that 1945 will prove very happy and prosperous. It will be a pleasure to renew our personal acquaintance any time that you happen to be passing through Phoenix.

Yours very truly,

GMC/b

December 2nd, 1943

REPORT ON FORD MINE, PROPERTY OF THE MAMMOTH TIGER EXTENSION MINING COMPANY

Mr. William Miller
Higley, Arizona

Dear Sir:

As per our arrangement and following our joint visit to Mammoth on November 21st, I went to Tucson on November 26th for conference with Ed. Holderness on this matter and subsequently to Mammoth where the officials of the Mammoth-St. Anthony Company kindly showed me all of their maps and mine models. On the following morning I had a conference with William Ward who had just returned from the East and who gave me much information concerning the Ford Mine but was unable to accompany me to the property which I subsequently examined alone as far as I was able to do so with safety.

I beg to submit the following report on same:

LOCATION:

The five unpatented lode mining claims held by the Mammoth-Tiger Extension Mining Company are named Old Glory #1, 2, 3, 4 and 5 and are located to the south and west of the patented mining claims of the Mammoth-St. Anthony Mining Company in Township 8, South Range 16 East Gila and Salt River Base and Meridian as shown on the attached map (Exhibit A).

By comparison with the U. S. Patent Survey of the Claims of the Mammoth-St. Anthony Company I determined that a portion of Old Glory #4 as shown on the map which you furnished is in conflict with the Erfletch patented claim and to that extent it is

invelid and hence not drawn in on my map which I believe to be approximately correct and which shows a portion of the St. Anthony holdings, the location of their shafts on the Mammoth and Collins Veins and of the workings on the deepest level (900') from the Collins Shaft.

The shaft and general location of the workings at the Ford Mine are also shown.

HISTORY:

The Tiger Extension is locally known as the Ford Mine having been first developed by a man of that name some forty years ago. It is reported that Ford sorted out and shipped a small quantity of high grade lead-silver ore, but I could find no stopes at or near to the surface from which this ore had been taken.

Later some work was done by Sam Houghton and a few years ago the property was taken over by Dietrich and Roy L. Baird of Los Angeles who organized and promoted the Mammoth-Tiger Extension Mining Company and subsequently secured an R.F.C. loan for $8,500 which was expended largely in developing the 4th level without finding any shoot of pay ore.

The one small shipment of lead ore made by Baird was too low grade to pay the freight and treatment charges and after the mine had been examined by Maitland, an R.F.C. Engineer, the Government refused to advance any further sums of money and now hold a lien on any shipments that may be made and claim to have a chattel mortgage on the equipment although according to Wm. Ward only one drill was purchased with Government funds and the balance of the

equipment had previously been purchased and paid for by the Company.

GEOLOGY:

The country is pre Cambrian granite, badly faulted and intruded by dikes of later volcanic rocks mainly andesite and rhyolite which often form a breechia in the fault zone.

Since it is believed that the Mammoth vein is in reality a faulted segment of the Collins it may be said that only one productive vein has yet been found in this district. Repeated efforts to develop commercial ore in other veins such as the East Collins and Dream have proved quite futile, and the same is true of the numerous cross faults and outlying faults to which class the Ford vein or fault seems to belong.

Excepting only the Mammoth-St. Anthony, no mines are now being worked in this district nor have any been profitably worked in the past except on claims now owned by that company.

The workings on the Collins vein have now reached a depth of 900' but at this point they are nearly 1000' from the true side line of the Old Glory #4,--which is correctly shown on the attached sketch (Exhibit A). There are no cross veins from these workings which strike in the direction of the Tiger Company property and if the Ford fault on which the Tiger workings are located should extend to the southeast it would pass a long distance to the west of any of the known ore bodies in the St. Anthony Mine.

After a careful search I could find no trace of this fault on the east side of Tucson Wash nor could I learn that it had ever been located by others.

EQUIPMENT:

The principal items of equipment at the Ford Shaft comprise sheds over the hoist and compressor and two wooden shacks one of which was used as a change room and the other as a store-room in which there are now some empty oil-drums.

The shaft has a 30' head frame with sheave wheel and 5/8" hoisting cable, a single drum Fairbanks Morse gasoline hoist, a Chicago Pneumatic gas driven compressor with auxiliary receiver, a hand driven forge blower and anvil.

All of the above appear to be in workable condition and Ward told me that the company also had some drills and small tools which he had removed and locked up elsewhere for safe-keeping. The shaft is equipped with pipe lines for air and water. The total sale value of such equipment as I saw would probably be less than $1000.

FORD MINE WORKINGS:

These are located along a fault fissure in the granite in which there is a narrow dike of andesite. The general strike of this fault is north 30 to 40 degrees west and dips about 70° to the south west. The vertical shaft is sunk in the foot wall.

Access to the mine workings is gained thru an adit tunnel which runs northwest from near the collar of the shaft 12' above the level of Tucson Wash and the winzes which connect it with the lower levels which are shown on the maps that accompanied the application for the Government Loan.

The dangerous condition of the last ladder above the 1st level made it unsafe for me to personally inspect the lower workings but from Ward and Maitland, Engineer for the R.F.C., I obtained information in their regard which I believe to be accurate.

The adit level follows northwest and turns almost due north along the strike of the fault and andesite dike. This dike which follows the fault in the granite has a gouge which contains iron stained clay and brecciated rock. Along the fault seam and in the foot wall granite, as shown by short crosscuts, there are small pockets and narrow streaks of decomposed wall rock which show stains of lead and copper carbonate but there is no indication of any true vein or continuous shoot of ore although the surface showing indicated that such a shoot might have been found at greater depth.

The first level at a depth of 45' showed no improvement while the 2nd level 57' below presented a somewhat more encouraging picture, as the mineralization looked stronger to the eye but sampling failed to confirm this impression except near to the shaft where some carbonate ore had been mined during previous operations.

On the 3rd level, 61 feet further down, there was a little streak of oxidized ore near the northwest end of the drift and picked samples showed as much as 2.5% lead and 14% copper but they represented no substantial tonnage.

The 4th level, 41' below the 3rd or 206' below the collar of the shaft, was the location of practically all of the most recent operations. Here the drift was advanced northwest from 70 to 200' and at a distance of about 150' from the shaft a stope was carried up over a length of 25A and to a height of 20' and later a winze was sunk about 15' below the level.

In this area there were some nice looking stringers and pockets of galena and several picked samples were taken some of which assayed as much as 20% lead and 10% copper but the one car load of ore which was produced and shipped assayed

Gold	0.02 oz. per ton
Silver	7.60 " " "
Copper	1.22%
Lead	5.8 %
Zinc	0.10%.

The net loss resulting from shipping this ore to the El Paso Smelter was $87.81.

The R. F. C. subsequently refused to advance any further funds to permit the continuance of operations since their engineers after careful investigation had definitely concluded that there was no pay ore shoot in the mine and no reasonable

hope that ore could be developed in commercial quantity either at greater depth or along the strike of the vein.

The collar of the Ford Shaft is at an elevation of 2900' or about 500' lower than the Collins Shaft and therefore it was to be expected that water would be encountered a short distance below the present workings and the flow would certainly be extremely heavy.

Practically all of the development work was done to the northwest from the shaft and Ward is of the opinion that better results might have been obtained by drifting along the fault to the southeast, but I could see no indications that such would have been the case and certainly there is no justification for continuing the development work in either direction.

During the course of operations a number of samples were taken and assayed by the St. Anthony Company. A few of these which apparently represented merely picked specimens showed a high content in lead and one carried 6.72 oz. silver. None of the other samples showed any appreciable quantity of gold or silver and they contained only traces or molybdenum and vanadium so that there does not appear to be any great similarity with the typical ore from the Mammoth-St. Anthony Mine.

RELATION OF FORD AND ST. ANTHONY MINE:

The attached sketch (Exhibit A) gives the location of the Mammoth and Collins Shafts, and veins and a rough outline of

the workings on the 900' (deepest) level in the Collins Vein. From this Sketch it will be noted that this 900' level, where the ore lies furthest to the west, is just about 1000' north of the true east side line of the Old Glory #4 Claim. Since this vein dips to the ~~W~~S outhwest it might eventually cross the west line of the Erfletch Claim but this could only happen (unless it flattens out) at a depth of some 5000' to which it never will and never can be worked because the present inflow of water is 2000 gallons per minute involving a pumping cost of $250.00 per day and no attempt to go deeper will be made by the St. Anthony Company.

Moreover, and this is vitally important, the St. Anthony Company have staked claims along the outcrop on apex of the Collins Vein for a lineal distance of over 4 miles and even should the vein dip across their side lines at any point along its strike the Apex Law would give them the legal right to follow it down below the claims of other parties and to mine any ore that they might thus develop.

Messrs. Foxard (Manager), Richards (Mine Supt.) and Daggett (Engineer and Geologist) for the St. Anthony Company very kindly showed me all of the survey maps of their workings and the glass model of the mine all of which fully confirmed the above statements and there was not the slightest indication of any work at or near to the Tiger Extension Line. All of their mining has been done on the Collins Vein and on the Mammoth (including the Mohawk and New Year) which represents the upper segment of the Collins thrown ~~to~~

to the east over 1000' by the Mammoth fault. They have tried to find ore in the Dream Vein and Collins East Vein, but so far with no success. They have never found any sign of cross veins which might strike over into the Tiger Extension ground and they have never recognized on their ground any extension of the Ford vein. The St. Anthony Company cannot consider working below the 900' level because of the heavy and increasing flow of water at depth, and the lead-zinc sulphide ore which they are now mining there only barely pays its cost due to the bonus prices which the Government allows for those metals. According to reliable reports the St. Anthony Company may close down at any moment and is quite certain to do so as soon as the bonus payments are discontinued.

The officials of the St. Anthony Company have not the slightest reason to believe that the Tiger Extension Mine has any value and therefore would not consider any lease or purchase of this property although they would be only too glad to take over any mine in this vicinity which held a promise of being worked with profit.

Ed Holderness (whom I saw before visiting the mine) told me that the most favorable opinion on the Tiger Extension that he had ever expressed was to the effect that the Collins Vein might dip over into their ground at depth. He did not know how far the present workings were from the line, but thought that they might be about 500' away. However, he said that since he had learned of the very heavy flow of water in the St. Anthony 900' level he realized that any work at greater depth was out of the question and could not feel that the Tiger Extension had any value.

Similar opinions were expressed by William Ward except that after looking over the maps he realized that the workings on the Collins Vein were more nearly 1000' than 500' away from the Tiger Extension Ground.

CONCLUSION:

Abundant evidence, which I believe to be absolutely reliable, has convinced me that there is absolutely no truth in the suspicion that the St. Anthony Company are mining or ever have mined any ore in the Tiger Extension Company ground or anywhere near their line. The St. Anthony Company plan no further development either in depth or further to the north on the Collins Vein, where the pay ore shoot has a length of only 350'. At present they are extremely short of men to operate the better portions of their own mine and their margin of profit is so narrow as to make it very likely that they will shut down or greatly curtail their operations at any time. For all these reasons there is not the remotest chance that the St. Anthony Company would be interested in purchasing or leasing the Ford Mine at present, nor at any future time unless good ore should be found or strongly indicated on that property, which--in my carefully considered opinion,--does not justify any further exploration or development work by its owners or anyone else.

The possibility of turning the Ford Mine over to some local leasers was discussed with Ward since it seemed to me that this offered the one and only procedure by which the present stock-

holders of the Tiger Extension Company might hope to get even a small return on their investment; but competent leasers are hard to obtain at present, even where the showings of ore are attractive, and,--in view of the lack of such showings on the Ford property,-- the chance of being able to carry thru such a program seems to be extremely slight.

None the less and as a last resort I should advise you to:--

(1) Try to make a deal with the Reconstruction Finance Company to revise their claims so that the equipment would be released from any lien which they may hold and to agree that the royalty on any future shipments of ore should be equally divided between your Company and the Reconstruction Finance Company.

(2) To make every effort thru Ward, who is well acquainted with the Mine and with the local miners, to find some leasers who would take over and attempt to develop and operate the mine on the usual basis of a 10% royalty. There is always a possibility,--although in this instance it seems very remote,-- that leasers, following up such showings of ore as they may be able to find, will improve the present showing and eventually be able to produce more ore than can logically be anticipated.

In any event, I regretfully, but strongly recommend that no further money should be spent for development or mining by you or your associates and should it prove impossible to obtain a satisfactory arrangement with the R. F. C. or to obtain any leasers to take over

the workings, I can only suggest that the Company be liquidated or allowed to die in a manner which will not involve any further risk of throwing good money after bad.

Yours very truly,

L. M. Colvocoresses

Tailings were measured and sampled in 1934 for the Valley Bank who were considering a loan to Jay Burns. Work was done by Woodlaw and Brinkerhoff of the Inspiration Copper Company and their report is not available but might be secured from the Valley Bank officials or from Tom O'Brien of the Inspiration.

Mammoth Mine — Samples

#1	Level	Location	Width	Au oz	Ag oz	Cu %	Pb %
1	3rd	7' under #3 level	7	0.02	—	—	22.4
2	4th	12' N of Shaft	5'	0.02	—	7.14	—
3	"	8' South of Shaft	4	0.575	—	9.24	—
1. A	4th	13' S of Shaft	6	0.02	0.30	—	0.21
2 B	"	22' N of Shaft	3.5	0.02	0.46	—	tr.
3 C.	3rd	S. end of X cut	13'	tr.	tr.	—	tr.
4 D.	"	16' above landing	4'	0.03	11.8	—	24.52
A	4th	16' S of Shaft	6	—	—	0.49	—
B	"	12' S side of Shaft	4	—	—	3.63	
C	"	31' fr. hanging	5	—	—	2.67	3.33
D	Third	3.5' face under hanging	3.5	—	—	—	34.10
E	"	face of X cut at S end of Shaft	4	—	—	2.10	—

REPORT ON

THE MAMMOTH-TIGER EXTENSION MINING COMPANY

Prepared By

ROY N. BAIRD

Geology and ore deposits are from the extensive research by a number of the leading engineers of Arizona on the Mammoth district. This survey was completed in 1938 and submitted to the Arizona School of Mines. The reports available show that the Mammoth Mining district is one of the outstanding mine deposits in the State, the Mammoth, Mohawk and Collins being the third largest producers in Arizona.

HISTORY OF OPERATIONS

Frank Shultz located the Hackney and Aaven claims on the Collins vein in 1879. This was known as the Old Hat mining district, the western portion of which became known as the Old Ford Mine. The mapped area is almost entirely in the West One-half of Section 26 and in the East One-half of Section 27, Township 8 South, Range 16 East. It lies on the east flank of the Black Hills, a low range north of the Santa Catalina Mountains. Later, in the year 1902, Ford started to ship ore out by wagon to Tucson. At that time the Mammoth and Collins shafts were down about 500 feet. The collar of the Collins is 300 feet above the collar of the old Ford mine. They were pumping water in the Mammoth, Collins, Mohawk and Ford mines. In 1920, the Ford mine was shut down due to the expense of pumping water and the long ore haul to Tucson. The mine remained filled with water for a number of years. The Collins, Mammoth, Mohawk and New Year mines, which join the Ford on the east, continued operations by pumping water continuously. They sunk to the 900 foot level, and in so doing, drained the water from the Ford mine. On August 24, 1941, a group of men joined in the purchase of this property, five claims in all. At this time, they set up a Corporation under the laws of Arizona, and renamed the old Ford mine the "Mammoth-Tiger Extension Mining Company."

RECENT DEVELOPMENTS

Since August 1941, all winzes, stokes and tunnels have been mucked out. A new gallows frame has been erected and the shaft has been retimbered. The manways have been reconditioned and new ladders and platforms have been installed. A hoist shed, blacksmith shed and supply house have been built. There are tanks, a compressor, a hoist, blacksmith equipment, ore cars and small tools now on the property. A two-inch air line runs from the compressor to the bottom of the shaft (204 ft.), also a 3/4 inch water line from the surface to the bottom of the shaft.

FINANCIAL STATUS

The Mammoth Tiger Extension Mining Company holds a clear title to the entire property. All taxes and assessments are in and paid. All equipment is clear. There are no outstanding bills or obligations at the present time.

GEOGRAPHY

Location and Accessibility

The Mammoth-Tiger Extension Mine is in Pinal County, Arizona, three and one-half miles southwest of Mammoth, a small village on the San Pedro River, twenty-one miles south of Winkelman. A good highway gives access to within three and one-half miles of the mine, the remainder being a dirt road running thru the Tucson wash. The mine is about fifty miles north of Tucson and twenty-one miles south of Winkelman. A branch line of the Southern Pacific Railroad runs thru Winkelman.

DESCRIPTION OF PROPERTY

There are five claims in all, from Numbers 1 to 5 respectively. They are recorded in Florence, Arizona, under the Old Hat mining district in Book 46, pages 611 and 612 and Book 50, pages 495 and 524.

DRAINAGE AND RELIEF

This property is drained by the Tucson Wash that runs into the San Pedro River which flows northwesterly and empties into the Gila River at Winkelman. The most important tributary in the vicinity is the Tucson Wash, which forms the north and west boundaries of the mapped area. This Wash rises near Oracle and drains a large territory, but like most of the water courses in this region, is dry except after a heavy rain. Its hard packed sandy bed provides a roadway over which much of the adjacent country is accessible.

ALTITUDE

The mapped area ranges from 2,800 to 3,500 feet above sea level. The collar of the Mammoth-Tiger Extension Mine is approximately 2,700 feet above sea level.

GEOLOGY

Rocks of the Area

ORACLE BIOTITE GRANITE

The oldest rock exposed in the Mammoth area is the Oracle granite, which outcrops in the southwest quarter of the mapped area. In Camp Grant Wash, about ten miles north of the mines, it is unconformably overlain by the pre-Cambrian Apache series and by valley fill. It is separated from the Oracle granite of the Oracle area by a belt of alluvium two or three miles wide.

In the Mammoth-Tiger Extension mine, granite is the most important host rock for ore, but it is almost entirely lacking in the formations cut by the main veins.

Surface exposures of the granite are a light buff color and coarsely granular in texture. Deeply weathered areas of the rock appear distinctly reddish, particularly when viewed from a distance.

The granite forms low, rounded hills whose slopes, covered by coarse granite sand, present a marked contract to the rugged topography of the lava covered areas. At higher elevations where precipitation is greater, as around Oracle, tops of the granite hills are covered by large rounded boulders. The valleys are filled with a thick mantle of granitic gravel, and the intermittent watercourses show deposits of magnetite sands derived from the granite.

The granite is prevailingly a coarse-grained, porphyritic rock with large pink or salmon colored feldspars 1¼ or 1½ inches across, that give it a pink and gray mottled appearance on fresh surfaces. The groundmass consists of uniform grains of clear white feldspar and glassy quartz, about 0.2 inch in diameter, with greenish black masses of biotite and magnetite.

In the vicinity of Oracle, dark basic segregations are common in the exposed boulders of granite, but this feature was not observed at Mammoth.

In thin section, the pink feldspar phenocrysts are seen to consist of microperthite with a little microcline; together they make up about 37 per cent of the section. The groundmass consists of well formed crystals of oligoclase-andesine, AB70 An30, which constitutes about 28 per cent of the rock. Quartz forms about 28 per cent, green biotite about 5 per cent and titaniferous magnetite and apatite the remaining 2 per cent.

The samples studied were obtained from the 700 and 500 foot levels of the Mammoth Mine and appeared fresh in the hand specimens. Under the microscope, however, the plagioclase is seen to be largely altered to sericite. This alteration is confined almost entirely to the albite intergrowths.

The composition given above suggests that this rock should be classed as quartz monzonite rather than granite. Plagioclase amounts to 43 per cent of the total feldspar, which is well above the 33 1/3 per cent limit set for granite. Also the plagioclase is more calcic than is characteristic for granite.

APLITE

The Oracle granite is intruded by numerous dikes and small, irregular bodies of aplite which do not invade the later formations. The dikes range from a few inches to ten feet in width, strike irregularly and dip steeply. A few masses of aplite, roughly circular in outline and generally less than one hundred feet in diameter, are present.

The aplite is a uniformly medium-grained, sugary, pinkish-gray rock whose grains of pink orthoclase, white plagioclase, quartz, and brownish specks of mica can be recognized with the aid of a hand lens.

In thin section the aplite is seen to consist of interlocking, nearly equidimensional grains of quartz and feldspar. The feldspar grains average 0.03 inch and the quartz 0.016 inch in diameter. The composition of the section is approximately 60 per cent feldspar, 36 per cent quartz, 2 per cent muscovite, 1 per cent biotite, and 1 per cent magnetite with a little apatite. The feldspar is about half microcline and half oligoclase of the composition Ab87 An13. The plagioclase grains are in general a little larger than the microcline grains.

ANDESITE PORPHYRY

Intruding the Oracle granite and the aplite are abundant dikes and irregular bodies of andesite porphyry. These masses tend to be larger than the aplitic intrusives.

The andesite porphyry shows laths of altered white feldspar, up to 0.14 inch long, and hexagonal prisms of green mica, up to 0.08 inch across, within a dense grayish groundmass that constitutes about 60 per cent of the rock. Viewed microscopically, the feldspar is seen to be completely altered to sericite and epidote, but some ghosts of original albite twinning remain. The mica has been completely chloritized and sericitized. The groundmass consists of sericitized laths of plagioclase, about 0.004 inch long, together with interstitial limonite and chlorite derived from augite or hornblende. Some accessory magnetite and apatite are present.

AGE OF THE ORACLE GRANITE AND ASSOCIATED ROCKS

Stratigraphic evidence for the age of the granite is lacking in the Mammoth area. About ten miles farther north, however, similar granite is overlain, apparently with depositional contact, by the pre-Cambrian Apache group. This contact is exposed in Camp Grant Wash, 2½ miles west or Arivaipa School and 11 miles south of Winkelman. Here, the Scanlan conglomerate and Pioneer shale, which are the two lowest members of the Apache group, contain fragments of the underlying granite. As the basal strata show no evidence of metamorphism, the granite is Camp Grant Wash is clearly older than the Apache group. Microscopically,

this rock is similar to the Oracle granite, but it has not been proved to be part of the same intrusion.

Pending further study of this problem, it appears safe to assume that the Oracle granite is older than the Apache group.

VOLCANIC ROCKS

Volcanic rocks occupy the entire portion of the mapped area north of the Turtle fault and also outcrop for about three miles west of Tucson Wash to a fault which brings them in contact with the granite. North and east of the area they are covered by Gila conglomerate and alluvium.

The volcanic rocks consist of basalt, flow breccia, and agglomerate, interbedded with conglomerate, arkose, and possibly tuff. All are tilted 45 to 60 degrees northeastward and strike N.30 to 45 degrees W., with the older united at the west.

The total thickness of the volcanic series has not been determined. Measured eastward from Tucson Wash to a point where the lavas are covered by alluvium and Gila conglomerate, a thickness of 3,600 feet is exposed. They may extend eastward for some distahce under this cover. West of Tucson Wash the structure is so complicated by late faulting that their extent westward cannot be determined without further detailed study and mapping. It is probably safe to assume that the total thickness is well over 5,000 feet and perhaps much more.

The earliest basalt lavas picked up much of the coarse, granitic sand and conglomerate that mantled the granitic land surface. At first the flow of lava that reached this particular area was small and interrupted by erosion which dissected the lava surface. The deposits of erosional debris that accumulated were covered and indurated by subsequent flows or picked up to form agglomerates. Some of the earlier flows, such as the series of basalts at co-ordinate position 1800 N. and 800 E., probably floowed narrow valleys. Small lenses that occur with the lower members of the main series of flows possibly represent intrusions.

The basal member of the volcanic series is probably represented in the outcrop 800 feet east of the Mammoth shaft. This outcrop is also completely isolated by alluvium, but underground data indicate that basal member to be the hanging wall of the rhyolite sill that was intruded along the contact

between the granite and the overlying lava. This member is an agglomerate composed chiefly of varicolored basalt fragments together with abundant granitic material. The outcrop strikes N. 45 degrees W. and dips about 65 degrees northeast. The abnormally steep dip is probably due to tilting caused by the instrusion of the rhyolite sill. As this member dips under the alluvium, the next member of the sequence and the relation to the flows north of the Turtle fault cannot be determined.

The first member represented north of the Turtle fault and just east of Tucson Wash is a dary-gray basalt or andesite flow breccia composed of angular fragments in an altered basaltic groundmass.

Next follows a series of about 600 feet of alternating basalt flows and clastic rocks composed of material derived from the basalt and from granite. The clastic layers are 60 to 150 feet thick; the basalt is generally a little thicker. The basalt is dark gray and fine-grained, whereas the intervening strata are dark brown with a sandy texture. The Mammoth fault is believed to form the east boundary of this series.

In thin section the clastic rock resembles fine-grained arkose of quartz, sericitized feldspar, and grains of magnetite and hematite in nearly opaque matrix of limonite, epidote, and chlorite. Areas of secondary quartz are common throughout the section.

The unit next above owes its position at least partly to faulting, and its stratigraphic relation to the rocks above and below is uncertain. It is made up of clastic material that ranges widely in character but contains a large proportion of dense, gray fragments characterized by glassy feldspar phenocrysts and plates of dark biotite. As no quartz is present, these fragments are probably latite.

In places the rock of this unit looks like typical volcanic tuff composed of fragments of gray latite, basalt, and decomposed granite of all sizes and shapes. Other phases are made up of latite fragments less than an inch across with a few fragments of basalt. The aggregate, which has the tenacity of a homogenous rock, resembles the intrusive breccia of the mineralized area, but its matrix lacks the characteristic hydrothermal alteration.

Above the member just described the flows become more massive and homogenous. The accumulation was apparently gradational from dark purplish basalt upward into red vesicular basalt and then into flow breccias containing abundant fragments of the gray latite. Overlying the latite breccia is a thick series of basalt flow breccias consisting of a rubble of angular and subangular fragments of basalt up to two feet, but most commonly about two inches, in diameter.

The foregoing is but a brief description of the volcanic series. The lithology and structure are complicated and constitute a problem beyond the scope of this report.

RHYOLITE

Rhyolite intrusions are abundant throughout the mapped area and in a mile-wide strip that extends westward for about two miles. These intrusions occur as dikes and irregular bodies in the granite and as irregular dikes and sills in the lavas. The dikes are ten to one hundred feet thick and generally dip steeply. The sill-like body intruded between the granite and lavas in the central part of the area is three hundred to five hundred feet thick and has numerous apophyses.

The rhyolite is pink, light cream or light gray and has a fine-grained, almost glassy texture. It is generally porphyritic, but only the larger bodies contain conspicuous phenocrysts. Flow banding is common. In places the rock is speckled with small, cark-red blebs formed by the oxidation of pyrite.

Under the microscope a thin section of the typical pink porphyritic rhyolite is seen to consist of laths of unaltered sanidine, averaging 0.03 inch in length, and corroded grains of quartz, averaging 0.01 inch in diameter, in a fine-grained groundmass that makes up about 80 per cent of the rock. This groundmass consists of overlapping grains of quartz and feldspar, 0.03 millimeter in average diameter. Forming a mat over the entire groundmass are tiny prisms of a light-green mineral that resembles epidote or zoisite. It is undoubtedly not an original constituent of the rock. It alters to fine grains of hematite which color the rock pink.

Along the borders or less commonly in the interiors of most of the larger intrusive bodies are irregular areas of breccia composed of angular rhyolite fragments in a matrix of banded rhyolite. These areas are outcrops of conduits through which flow of extremely viscous material continued after the remainder of the intrusive mass had solidified. The included fragments are generally of the same texture as that of the normal phase of the intruded mass. There were doubtless periods when the propelling force in these conduits took the form of explosions caused by sudden release of gases that originated in the parent magma. Evidence of hydrothermal action is clearly brought out in microscopic study of these breccias. The feldspar phenocrysts tend to be bent or crushed; the quartz grains are corroded or embayed and generally shattered. Secondary quartz has formed between the fragments of shattered minerals and in fractures in the rock. Some sanidine crystals are partly replaced by quartz which spreads through the interior of the crystal. A few of the feldspar phenocrysts are of albite of the composition Ab90 An10. If these are the result of hydroghermal action, the albitization occurred early, since much of it is crushed, and the fractures are filled with secondary quartz. A little spidote occurs in the feldspar grains.

In places the breccia contains small fragments of basalt with indistinct borders that blend into the rhyolite matrix as if they had been partly assimilated. In many occurrences these fragments must have been transported a considerable distance by the magma. The breccia in these pipes is similar in many respects to the typical intrusive breccia, which is believed to have originated in a like manner but on a much larger scale.

FAULT FORMATIONS

There are two important faults which crosscut this property. The one on the south that runs east to west across claims 5 and 1. This fault acts as a water shed for Mammoth-Tiger Extension mine, deflecting the flow of water toward the Mammoth and Mohawk property. It is this fault that we propose to drill a well on the upper side for commercial water supply. The Turtle fault crosses claim 2 on the north and runs to a point northeast of the Collins and Mammoth property. This may be considered the northern limit of the known ore bodies. It forms the northern

contact of the granite with the agglomeritic lava flows. Its general strike is N. 70 to 75 degrees E., and its dip about 65 degrees NW. The outcrop of the fault is exposed for a mile west of Tucson Wash to a point where it is cut by a northwestward-striking fault that marks the west contact of the lavas with the granite. Whether or not it has been offset by this fault and continues westward has not been determined. The Turtle fault is cut by the Mammoth fault, and the position east of the Mammoth fault offsets to the south between one hundred and two hundred feet. East of this offset the course of the fault can only be surmised. Small bodies of basalt are intruded into the fault fissure where it crosses the ridge north of the Collins Mine, and recurrences of these intrusions to the east are believed to mark the locus of the fault. Farther east the relatively sharp, straight contact of the intruded breccia with the recent alluvium probably marks the approximate trace of the original scarp.

West of the intersection with the Mammoth fault the character of the outcrop varies from place to place. On the hillside east of Tucson Wash it appears as a black calcite vein 1½ to 2 feet wide with a zone of rhyolite fault breccia on the footwall. The rhyolite fragments are recemented by silica and white calcite, forming a resistant aggregate that projects several feet above the adjacent surface. West of Tucson Wash, where granite forms the footwall of the fault and agglomeritic lavas the hanging wall, the fissure contains deposits of silica and calcite but no breccia.

The hanging wall moved down with respect to the footwall. As already described in the discussion of the structure of the lavas, this displacement must have been great in order to bring the granite and lava flows into their present relationship.

STRUCTURE

General Statement

The major structures of the region trend northwestward, roughly parallel to the Santa Catalina and Galiuro mountain ranges. This trend is exemplified in the strike of the fault that forms the west contact of the lafa with the granite, in the strike of the Mammoth fault and the Mammoth-Tiger vein, and in the strike of the tilted lava flows.

An eastward trend of secondary importance is shown by the Turtle fault and the Collins vein.

GILA CONGLOMERATE

The Gila conglomerate, originally described by Gilbert, is a thick deposit of fairly well consolidated alluvial material, accumulated under arid conditions in the valleys of southern Arizona.

Deposits believed to be equivalent to this formation underlie a large part of the region around Mammoth. Bryan considers beds in the San Pedro Valley, in the Winkelman quadrangle, from which he and Gidley collected numerous fossils, as equivalent to the Gila conglomerate of the Ray and Christmas quadrangles. Gidley determined fossils from two localities as of probable late Pliocene age.

In the vicinity of the Mammoth Mine the formation is a semi-consolidated, roughly stratified conglomerate of poorly sorted, rounded to subangular pebbles. The pebbles consist of basalt, basic porphyry, and crystalline rocks, most of which are unknown in the vicinity. Their original source probably was southwest of the area.

The conglomerate is tilted and cut by many normal faults of small displacement. The Mammoth fault depressed blocks of the conglomerate so that in places it forms the hanging wall, in contact with granite, rhyolite, and intrusive breccia of the footwall.

According to Bryan:

> The mountains of the San Pedro Valley region of southern Arizona are the residual elevation resulting from an uplift that involved the Fila conglomerate. This well known formation, restricted according to Gilbert's original definition and the usage of Ransome, is a valley fill now deformed and dissected, but accumulated under arid conditions in enclosed or partly enclosed valleys.

STRUCTURE OF THE LAVA FLOWS

The lava flows have been tilted 45 to 65 degrees NE. The mechanics of this deformation is not clear, but two possible explanations will bé offered.

The tilting may be due to folding in which compressive stresses in a southwest direction thruse the flat-lying lavas into a series of folds with axes striking northwesterly. The lave flows in the Mammoth area would, in this event, represent the east flank of an anticline. A parallel synclinal structure for the San Pedro Valley is suggested by the abnormally steep dips of some of the older Tertiary sediments on both sides of the valley. The eastward dip of the Palezoic Mountains may not support this view; but on the other hand, these sediments could have had a much steeper dip to the east before the folding took place.

This explanation of the structure would involve extensive thrust faulting in the underlying granite, but no evidence of the existence of such faults has been found. Minor thrust faults are present in Tucson Wash, just north of the mouth of Cloudburst Canyon, but their extension cannot be traced beyond a small area.

The second hypothesis suggested is that the lavas constitute a faulted block or series of blocks tilted by rotational movement on curved fault surfaces accompanied by some shearing along the bedding planes. In this case it is assumed that the lavas flowed out over the land surface and solidified with a moderate initial dip toward the east. Subsequent normal and reverse faulting increased this dip and brought the flows into their present attitude. This type of faulting is suggested by Burbank to account for the tilting of the lavas in the Bonanza district, Colorado. The prevalence of high-angle, northwesterly striking faults in the Mammoth area is in keeping with this idea. The tilted blocks would thus constitute an area bounded on the east (depressed side) by a major fault that coincides roughly with the bed of the San Pedro River, and on the west by a fault that forms the contact with the granite west of the district. The Turtle fault cut off the lavas on the south, but the tilted structure continues northward for at lease ten miles.

Two miles south of Feldman, Camp Grant Wash shows a section of the Apache group resting on granite and overlain by Devonian and Mississippian limestone, with the same structural attitude as the lavas to the south.

Much of the area occupied by the lavas is covered by late Tertiary sediments and recent debris. In many places the nature of the flows themselves hinders determination of strikes and dips. In many exposures the lavas are not banded, and contacts between units are partly or wholly concealed, but wherever reliable measurements can be made the general attitude of the flows is remarkably consistent. The strike ranges from N. 30 to 45 degrees W. and the dip from 45 to 65 degrees NE. The attitude of the lavas is also shown by the trend of rhyolite sills intruded into them.

Similar difficulties were experienced in mapping the faults in the lava-covered area; but the data obtained show a preponderance of strong, northwesterly striking faults.

The Turtle fault, which forms the south boundary of the lavas, brings the tilted flows in contact with the granite in such a manner that the strike of the flows is approximately at right angles to the strike of the fault. If the tilting is the result of block faulting it is obvious that the amount of displacement on the Turtle fault necessary to bring about the existing relation between the flows and the granite would be less than if folding were the agent.

It is also possible that a combination of folding and faulting may have produced the structure.

MINERALS OF THE ORE DEPOSITS

The following minerals are associated with the ore deposits of the Mammoth area:

Adularia (orthoclase)
Anglesite
Azurite
Barite
Beudantite
Biotite
Bornite
Calcite
Cerargyrite (?)
Cerussite
Chalcocite
Chalcopyrite
Chillagite (?)
Chlorite
Chrysocolla
Pyrite
Pyrolusite
Pyromorphite
Quartz
Serpentine
Silver
Covellite
Descloizite
Ecdemite
Fluorite
Gold (native)
Galena
Hematite
Heminorphite (calamine)
Kaolin
Limonite
Magnetite
Malachite
Mimetite
Mottramite
Psilomelane
Smithsonite
Sphalerite
Tenorite
Vanadinite
Wulfenite

SULPHIDES

Chalcocite (Cu_2S), Covellite (CuS), and Bornite (Cu_5FeS_4)

Chalcocite, Covellite and Bornite occur as very thin films on other sulphides and as replacements of chalcopyrite and rerely Sphalerite. In replacement areas all three generally show progressive replacement, with Bornite earliest, followed by Covellite and Chalcocite. In places small masses of Galena are replaced and surrounded by thin shells of intermixed Covellite and Chalcocite, enclosed in another shell consisting of a mixture of Azurite, Malachite, Cerussite, and perhaps a little Anglesite which grades outward into a thick shell of white Cerussite.

Galena (PbS)

Galena is nearly as abundant as sphalerite in the unoxidized veins, and the wide distribution of Cerussite, Wulfenite, and Anglesite in the oxidized veins indicates its abundance in the hypogene mineralization. Remnants

from less than an ounce to several pounds in weight occur enclosed in shells of cerussite and copper carbonate in the oxidized veinw. Galena remnants are common thruout the Mammoth-Tiger bodies, are much less common in the Mammoth Mine, and are comparatively rare in the Mohawk and New Year mines.

Galena was late in the mineral sequence and followed all the sulphide minerals except chalcopyrite and the supergene copper sulphides. Nearly all the galena seen in polished sections is a replacement of sphalerite or was deposited in open spaces in quartz-lined vugs and in veinlets of comb quartz. Galena commonly shows mutual boundaries with fluorite that formed in a similar manner. It rarely replaces pyrite.

During oxidation lead was immediately fixed in more stable forms as anglesite, cerussite, and rarely as complex arsenates.

Sphalerite (ZnS)

Sphalerite is the most abundant sulphide mineral. It occurs in irregular masses associated with galena or pyrite in the sulphide bodies of the Mammoth-Tiger Mine. All the sphalerite is peppered with myriads of chalcopyrite inclusions, most of which are visible only under high magnification.

Sphalerite replaces chlorite and quartz but does not replace pyrite and rarely shows mutual boundaries with pyrite. It is the mineral most subject to replacement by later sulphides.

In the oxidized zone sphalerite is altered to smithsonite and ehmimorphite.

HALOIDS

Cerargyrite (AgCl)

The silver in the oxidized ore bodies is probably present as cerargyrite, although this mineral appears only in the altered zones.

Pyrolusite (MnO_2)

Powdery manganese dioxide is widely distributed in the leached, spongy vein matter. Less commonly it occurs as thin, botryoidal crusts. The fine, black powder is generally intimately mixed with finely crystalline descloizite and accompanies the vanadium minerals.

Tenorite (CuO)

Black, coallike nodules of copper oxide, less than an inch or two in diameter, are present, generally in the barren sections of the veins. The nodules are usrrounded by thin shells of chrysocolla, and the enclosing rock within a radius of several inches shows more or less copper stain.

Psilomelane (Mn_2MNO_4)

Botryoidal masses of psilomelane ranging from the size of peas to pieces weighing several pounds were seen in the broken ore and lying on the surface.. The mode of occurrence of this mineral is unknown.

CARBONATES

Smithsonite ($ZnCO_3$)

Although not easily recognized in the ore bodies, smithsonite is doubtless widely distributed as crusts and porous masses in the oxidized vein filling, or which almost any fragment gives a decided chemical reaction for zinc. The mill heads carry from two to three per cent zinc of which most is probably in the form of smithsonite.

In places small colorless rhombohedrons of smithsonite form crusts on wulfenite and vanadinite.

Some of the calcite in the veins contains a little zinc.

Malachite ($CuCo_3Cu\ (OH)_2$) and Azurite ($2CuCo_3Cu\ (OH)_2$)

Malachite, with much smaller amounts of azurite, forms emerald green, mosslike masses commonly associated with cerussite. As short prisms or tufts of fine, green needles, it occurs associated with crystalline cerussite in cavities. Nodules of galena with replacement shells of covellite and chalcocite are surrounded by cerussite mixed with malachite and azurite.

Hemimorphite or Calamine ($H_2(Zn_2O)\ SiO_4$)

Only small amounts of hemimorphite were observed. It occurs in granular masses, loosely adhering to porous quartz in the oxidized ore bodies and also as slender needles bristling from quartz crystals that formed on the walls of open cavities. One specimen shows tufts of the slender needles growing on wulfenite crystals.

PHOSPHATES, ARSENATES AND VANADATES

Pyromorphite ($PbCl\ Pb_4(PO_4)_3$)

Pyromorphite, associated with vanadinite, is present as short, olive-green, hexagonal prisms on thin crusts of mottramite.

Mimetite ($PbCl\ Pb_4(AsO_4)_3$)

Mimetite occurs as bright orange or canary-yellow botryoidal crusts on fragments or on walls of open fractures. The crusts are generally associated with wulfenite which is clearly earlier than the mimetite. The color of ths mimetite is apparently modified by the same impurity that affects the color of wulfenite, for the two minerals together show similar color modifications.

Vanadinite ($PbCl\ Pb_4(VO_4)_3$)

Vanadinite is fairly abundant and widely distributed. It forms stubby hexagonal prisms, normally orange or coral in color. Very small, yellow prisms occur on the lower levels of the Mammoth-Tiger Mine.

The Vanadinite is not commonly associated with wulfenite, but where the two are present together, vanadinite was deposited on wulfenite.

Descloizite ($PB\ Zn)_2OH\ VO_4$)

Descloizite occurs as thin crusts of very small, pointed crystals which coat breccia fragments and quartz boxwork in leached vein matter. The mineral is widely distributed and with mottramite is the most important source of vanadium in the ores. The crystals are of uniform brownish red throughout the area. Microscopic crystals of descloizite are commonly intermixed with powdery manganese oxides.

Descloizite has a longer range of deposition than the other vanadium minerals.

Mottramite ($Ph\ Cu)_2OH\ VO_4$)

Mottramite crystals are jet black but otherwise like those of descloizite. Both minerals occur in thin crusts that scintillate very conspicuoucly in the light. The difference between the two minerals is not apparent except on close examination.

The age relations of mottramite are similar to those of descloizite except that descloizite continues to form a little later than mottramite.

DISCUSSION OF EARLY MINERALIZATION

During the earliest stages of mineralization, while quartz was forming in narrow veinlets in the upper portions of the channels, deposition of metallic minerals was probably going on at some deeper zone. By the time the solutions reached the higher elevations they were fairly dilute and nearly in equilibrium with the wall rocks. They carried mainly potash, soda, silica and alumina and were almost lacking in the metallic elements.

This simple, early mineralization was interrupted by further movement that produced considerable brecciation along the course of the vein fault. The resulting increased permeability of the channel caused a sudden shifting of the zones of deposition. Minerals that were previously of a deeper zone approached nearer to the surface. For a time deposition was rapid from the hot, concentrated solutions that penetrated the relatively cool rocks nearer the surface, but as these rocks were gradually heated, deposition became less rapid, and the grain size of the minerals increased.

Calcium and magnesium were deposited as chlorite. The saturation point in calcium was not reached until near the close of this stage. In the early part of this stage the temperature was still too high for the formation of sulphides, but toward the end the deposition of pyrite and sphalerite had almost completely superseded that of chlorite and specularite.

The movement along the vein fault that marks the end of the second stage had very little influence on the sequence of mineralization. The minerals that were forming at the close of the second stage carry over into the third, and throughout the third stage there is a gradual decrease in the intensity of mineralization following a normal sequence of minerals, namely, pyrite, sphalerite, galena and chalcopyrite.

ORIGIN OF THE MOLYBDENUM AND VANADIUM MINERALS

Were the molybdenum minerals and most, if not all, of the vanadium minerals deposited by hypogene solutions? There is no other known source of vanadium and molybdenum for these deposits. They were not deposited b the same solutions that brought the primary sulphides but belong to a period that was later than the sulphides yet distinctly earlier than the supergene minerals. Minerals of molybdenum and vanadium that are generally conceded to by hypogene could not be found in the unoxidized ores, nor could decisive chemical reastions for these elements be obtained from 5-gram samples of the hypogene sulphides. To account for the molybdenum content of the Mammoth ores above the water table by enrichment of a primary deposition assumed to contaon 0.01 per cent MoO_3 would require the complete leaching and erosion of at least 10,000 feet of vein above the present outcrops. It is hardly conceivable that such loose, open brecciation could have existed very deep below the surface. For the same reason it appears improbable that the molybdenum and vanadium were leached from the overlying or surrounding rocks and deposited in the veins by supergene solutions.

The observed mineral relations show that wulfenite and the vanadates largely preceded the definitely supergene minerals and followed or were partly contemporaneous with a period of intense leaching which took place along certain channels that are especially related to concentrations of these minerals. The leaching wea more intense and left less evidence of oxidation than that normally associated with supergene alterations. Only vein quartz resisted the intense leaching action. After the honeycomb and boxwork of quartz was at least partly formed, deposition of wulfenite began in open cavities and on the walls of channels. The solutions that deposited wulfenite penetrated farther into the unbrecciated vein material than the later solutions that deposited vanadium and farther than supergene solutions. Wulfenite crystals occur attached to quartz crystals in small vugs well removed from any evidence of supergene alteration.

Descloizite and mottramite followed by vanadinite began to form after wulfenite crystals as large as any now present in the deposit had formed. The earliest vanadium

minerals contained copper and zinc in addition to lead.

In places crusts of vanadinite entirely cover large wulfenite crystals. Later the wulfenite was partly or wholly leached out, and fine crystals of vanadinite were deposited on the walls of, and projecting into, the resulting cavities. On the other hand, wulfenite appears to have been entirely stable in contact with supergene solutions. Specimens show all the common supergene minerals deposited on wulfenite crystals with no evidence of corrosion or replacement.

Doubtless some vanadium was dissolved and reprecipitated by supergene solutions, probably as descloizite and mottramite. Experiments by Notestein demonstrate that vanadium is soluble in ground water carrying sulphate ions, also the calcite precipitates vanadium from sulphate solutions.

The solutions that leached the early minerals and deposited molybdenum and vanadium were distinctly different from the solutions that deposited the early minerals, tho they doubtless were from the same source. The lead in the wulfenite, as well as the lead, zinc and copper in the vanadium minerals, was probably derived from galena, sphalerite and chalcopyrite of the preceding stages.

Little can be surmised concerning the nature of the solutions that deposited molybdenum, but it may be postulated that they were first strongly acid and that they became neutral and finally alkaline by reaction with vein minerals and country rock. Similarly, little is known about the conditions favoring the precipitation of lead molybdate in ore deposits. MoO_3 is only slightly soluble in water but dissolves readily in alkalies forming molybdates. It is also soluble in dilute sulphuric and hydrochloric acids. Lead molybdate can be precipitated in alkaline solutions or solutions of weak acids.

Molybdenum and vanadium minerals other than the sulphides have been deposited by emanations from magmatic sources, as in the Valley of Ten Thousand Smokes, Alaska, and in the lavas poured out during the eruption of Vesuvius in 1631.

SUPERGENE ENRICHMENT

The physical character of the Mammoth ore bodies was especially favorable for deep oxidation and for secondary transportation and enrichment of the ore minerals. The present climate is warm and arid, and the rainfall is comparable to other areas in the Southwest where oxidation is deep. The relief is relatively high and the water table deep. The veins are extremely permeable. Though oxidation is deep and the gangue only slightly reactive, the transportation and enrichment of the metals was largely prevented by the scarcity of pyrite which plays such a vital role in the production of sulphuric acid and ferric sulphate so necessary in enrichment processes.

Due, probably, to hypogene zoning rather than supergene enrichment, the lead and zinc content of the ore appears to increase slightly with depth.

Gold has undoubtedly migrated to some extent. The ores with highest gold content seem to lie at intermediate depths. In the Aguava tunnel and in the Smith workings supergene gold occurs as thin films deposited on iron rich minerals in the intruded breccia adjoining the veins. The chemical character of the deposits favors the solution and transportation of gold. Manganese dioxide is present thruout the veins, and the mine water is said to contain about 85 parts per million of sodium chloride.

Except in the Collins Mine thorough oxidation extends well below the water level. On the 750 foot level of the Mammoth Mine, which is 17 feet below the water level, there is said to be no noticeable decrease in the degree of oxidation. The maximum depth to which oxidation penetrated is unknown.

Galena oxidized in place, largely to cerussite with only very minor amounts of the complex lead phosphates and arsenates.

Zinc probably migrated to some extent as the zinc sulphate before it was finally fixed as smithsonite and hemimorphite; the effect was a more complete dissemination of the zinc rather than a concentration. As zinc has never been a source of revenue in the Mammoth ores, few assays that show its general distribution are available.

Copper went into solution and suffered more or less transportation, mainly as the sulphate but also as the colloidal silicate. Most of the copper was precipitated as carbonates or as chrysocolla, but a little recpaced sulphides to form bornite, covellite and chalcocite.

Pyrite oxicized and went into solution leaving behind only clean, empty cavities. The earthy hematite and limonite that are so abundant in the oxidized ore bodies were derived mainly through oxidation of chlorite and alteration of specularite.

WALL-ROCK ALTERATION

During the process of mineralization the solutions did not penetrate into the country rock more than a few feet beyond the fracture walls. Silicification, accompanied by more or less chloritization, was the only tupe of alteration recognized. The finely disseminated mafic mineral of the rhyolite groundmass was changed to chlorite. The most apparent change in the rhyolite is the bleaching of the groundmass to a dull, chalky white.

Megascopically and microscopically, the granite adjacent to the veins does not appear altered.

The intrusive breccia is more widely silicified than either the granite or rhyolite, doubtless partly due to its greater permeability, but also because much of its alteration took place at the time of its intrusion. In thin section the included rhyolite fragments are seen to be completely recrystallized to coarse-grained quartz intergrown with adularia.

RECONSTRUCTION FINANCE CORPORATION
WASHINGTON 25, D. C.

NOV 8 - 1943

Mr. William Miller
Higley, Arizona

Re: Mammoth-Tiger Extension Mining Co.
Docket No. B-MD-3912

Dear Mr. Miller:

In accordance with the request contained in your letter of October 26, 1943, there are returned to you herewith a copy of the application of Mammoth-Tiger Extension Mining Co. for a mining loan and exhibits submitted in connection with such application.

There is enclosed, in duplicate, a receipt for these documents, and it is requested that you sign the original of such receipt and return it to this office in the enclosed addressed franked envelope.

Yours very truly,

Secretary

Enclosures

RECONSTRUCTION FINANCE CORPORATION
WASHINGTON

NOV 8 - 1943

Re: Mammoth-Tiger Extension Mining Co.
Docket No. B-ND-3912

Received, from the Reconstruction Finance Corporation, the following:

1 bound application and supporting exhibits

_____

William Miller

Date _____.

11/16/43

NOTES FOR EXAMINATION OF MAMMOTH-TIGER EXTENSION MINE

On October 15, 1943 William Miller a rancher of Higley, Arizona called in company with Cal Boice and explained that he and his associates had financial control of the Mammoth-Tiger Extension Mining Co., an Arizona Corporation of which Miller is the Secretary-Treasurer, and his friends William Ward and Baird were also directors.

This Company owns 5 unpatented claims which adjoin on the west the property of the Mammoth-St. Anthony Mining Co. of which J. L. Fozard is Manager and Miller thinks that some of the underground workings of the Mammoth-St. Anthony have crossed one of their own end lines so that they may now be mining ore from the Mammoth-Tiger ground. (Sec 27 & 26 (rat) Tp 8 S R. 17 E. G. & S. R. B. & M.

The Mammoth-Tiger Co. have done quite a lot of work and in another part of their property they sunk a 300' shaft (now open) but this failed to develop any pay ore and Miller thinks that their best chance lies in working close to the St. Anthony line.

Last work was done with an R.F.C. loan of $8,500 which was secured by a mortgage on the property, but Miller says that this work was supervised by an incompetent man and that the money was wasted.

The present problem is to determine whether the mine has any present or prospective value and if so to try to work out some deal to turn it over to the St. Anthony Co. or others so that the loan could be repaid and the investors obtain some return on their money.

I suggested that it would first be necessary for me to make a physical examination of the property after which I would be in a position to give them some intelligent advice and to this Miller agreed, but thought that it would be advisable for him to first obtain some documents which had been sent to Washington.

On November 16th, Miller called to say that the papers from Washington had not been returned but that he was anxious to have me examine anyway and I agreed to do this for a fee of $250.00 which he accepted and gave me his check on the Mesa Branch of the Valley Bank for $100.00 on account.

It was arranged that I should meet Miller at the Coffee Cup Cafe, Mesa at 9:30 A.M. on Sunday, November 21st and he would drive me to Mammoth where we would meet Ward who would show me over the property. A few days later I will return to examine the workings and surface showings and if possible to go thru that part of the St. Anthony Mine which is in the vicinity of the Tiger Claims.

Extracts from old notes on Mammoth Mine and District:

September 19, 1924

Mr. W. P. Gohring
419 Heard Building
Phoenix, Arizona

My dear Bill:

Yours of September 17th duly received. I have always understood that there was considerable lead in the Old Mammoth Mine. I don't know of any one here at the present time who could give me any accurate information upon the subject, but I will make some inquiries.

* * * * *

* * * * *

P. S. Since writing the above, I have obtained a little further information from a friend of mine who saw some of the Mammoth assay maps. His recollection is that on the 700 foot level, there is a large tonnage of lead ore not blocked out, but more or less exposed and that assays show it to be of commercial value. Montgomery, I believe, made the assay map, but he is now some place in Georgia."

/s/ Frank K. Herford

* * * * *

Tallulah Falls, Georgia
September 24, 1924

Mr. W. B. Gohring
419 Heard Bldg.
Phoenix, Arizona

Dear Bill:

I have your letter of the 17th inst., and was glad to hear from you.

There is a good showing of lead ore on the bottom levels of the Mammoth Mine. A long crosscut driven on the 700 ft. level from the Mammoth shaft to the Collins vein, which is separate and distinct from the Mammoth vein proper, shows a long shoot of lead-zinc ore. The vein at this point has just turned to sulphides. I had this vein sampled at regular intervals and an assay plan made, which is in the Los Angeles office. My impression is that the average was about ten per cent lead and six or seven per cent Zinc, over an average width of about six feet. The length of the ore shoot is considerable.

The Mammoth vein itself, which has been worked for its gold value, also carries quite a little lead carbonates. This vein is much more open and porous than the Collins vein and I believe the oxidized zinc in this vein will extend for a considerable distance further in

depth, but eventually I believe this vein will also carry a good quantity of lead when the sulphides are encountered. The Mammoth vein will average something like 15 feet in width and is a very strong fissure vein in the granite near the contact of rhyolite intrusions.

In my opinion, the property is well worth developing. In addition to the lead possibilities in the Collins vein, the Mammoth vein carries good values in gold and Molybdenum.

With kind personal regards, I am

Sincerely yours,

/s/ Horace Pomeroy.

MAMMOTH MINE

Summary results of sampling and examination by the United Verde Copper Company in Spring and Summer of 1926.

	Probable Ore 30,000 tons.	Possible Ore 30,000 tons.
Cu.	.5 %	.4 %
Pb.	9.3 %	8.0 %
Zn.	7.2 %	6.0 %
Ag.	1.7 oz.	1.5 oz.
Au.	.015 oz.	.015 oz.

The mine makes a great deal of water and the pumping cost would b
be heavy. DeCamp figures that it would cost $134,000 to properly equip the mine and carry out the development work necessary in order to be able to economically mine the ore represented by the above estimate.

FOR MAMMOTH EXAMINATION

Note especially the location and condition of the Collins property which lies west of the old Mannoth and now presumably forms part of the holdings of the Mammoth-St. Anthony.

Total production to 1933 about $3,000,000 chiefly in gold from the Mammoth and Collins Mines; elsewhere the value of the production of the district is given as $5,204,000 to end of 1936.

Altitude about 3200. Formations are pre cambrian granite, tertiary breechia and conglomorate composed of andesite and diorite, tertiary intrusive rhyolite and ~~pholene~~ Pliocene Gila conglomorate.

All formations heavily faulted, and veins occur in shear-zone with gangue of breeciated country rock cemented and replaced with quartz and calcite and some barite and fluorite.

Gold occurs in the quartz and there are oxides and sulphides of iron, lead, zinc (little copper) tungsten, vanadium and molybdenum.

Two parallel veins which strike west-north-west and dip steeply to south-west northern vein contains the Mammoth, Mohawk and New Year ore shoots and southern vein contains the Collins and Smith ore shoots.

Shoots pitch to south-east.

Oxidization in Mammoth vein to 700' level and in Collins vein to 650' level, and large stopes were worked above sometimes for a width of 60'.

Veins are badly cut up by faults. The important point in connection with the examination of the Mammoth-Tiger is to determine in so far as

possible the probabilities that the ore in the Collins Vein may extend westward into their ground. This will involve an inspection of the surface workings and as much of the underground workings in the western part of the mine as may be made accessible.

11/19/43

Bill Gohring says that at the time that the R.F.C. granted the loan it appeared that a nice little body of lead carbonate ore might be developed in the shaft but this did not prove to be the case after the money had been spent, and the R.F.C. holds a mortgage on the equipment but will not attempt to liquidate it at present if there is a chance that the mine can be worked. They also have a lien against any ore shipments that may be made. They know nothing about the alleged ore body which lies along the line of the St. Anthony ground but Gohring thinks that Fozard would likely be glad to give me information on this matter.

MAMMOTH

President, Roy N. Baird
3763 Sixth Avenue, Los Angeles, California

Company applied for $20,000 R.F.C. loan on February 19th, 1942.

Property located in Mammoth or Old Hat Mining District, 21 miles south of nearest R.R. station at Winkelman.

Company incorporated in Arizona August 13th, 1941 with authorized stock 150,000 shares common of which 100,000 are issued and 50,000 in treasury. No liabilities except the R.F.C. loan.

Mining claims are:

Old Glory #1, 2, 3, 4 and 5.

A. S. & R. at Hayden or El Paso would purchase ore with payment for gold @ 32.31825 per oz.--for 95% of the silver (less minimum deduction of 0.5 oz) @ 70.5/8¢. Copper less 8# deduction 95% @ market less 2.5725¢ per lb.

Treatment $3.50 up to $15.00 value plus 50¢ per ton for handling truck loads and 10% increase for value in excess of $15.00.

Lead deduct 1.5% and pay for 90% of balance @ market less 1.56¢ per lb.

(No Terms for zinc).

Samples	#1	#2	#3
Au	$0.70	$0.70	$19;25
Cu	--	17.14	9.24
Pb	40.32	--	--

Estimated cost of developing		$2.80 per ton
Mining		3.20
		$6.00
Mill and smelter charges		$3.50 on copper ore and
		$4.75 per ton on lead ore.
Haulage to Winkelman or Hayden		$2.00 per ton
Freight to El Paso		$4.30 per ton on $40 lead ore
	and	$3.40 " " on $15.00 ore.

At east end of Old Glory Claim #4 a large body of ore which appears to go across the claim line is said to have been developed by the St. Anthony Mine on the 600' and 700' levels.

Some assays show gold from 0.01 to 0.54 oz.; Copper 5.8 to 10.6%; Lead 5.7 to 31.3%. Some silver, one assay shows 11.8 oz.

Note by G.M.C.

Except for the assays of a few scattered samples which may have no significance there does not appear to be any pay ore developed or indicated in this mine nor any evidence that a body of pay ore is likely to be found unless this can be obtained from an inspection of the workings of the St. Anthony Mine.

Application for loan is filed by R.F.C, as B-N.D. 3912.

11/22/43

NOTES FOR EXAMINATION OF MAMMOTH-TIGER EXTENSION MINE

The workings on the Collins Vein as shown on the maps down to the 650' level extend about 400' west by south from the shaft and terminate at a point about 150' northeast of the northeast corner of the Old Glory #4 Claim. The dip of this vein is about 68° to southwest and the ore shoot some 350' long pitches to the northwest along the strike of the vein although the workings as noted above seem to run south of west.

The vein near the surface seems to lie along a contact between a hanging wall of granite and a foot wall of rhyolite or later volcanics, but lower down both walls are in the Oracle Granite.

The Tiger Extension Shaft (near north end of Old Glory #1) is all in granite and the workings, which presumably follow the vein run north 50-70° west and extend for a distance of about 150' in that direction from the shaft and for only a very short distance to the southeast in which direction a projection of this vein would strike thru the Mammoth Claims a long distance south of all the Mine workings.

If the Collins vein should continue southwest, the dip might carry the lower workings across the north end line of #4 Claim in which case Mammoth Co. would have no right to mine any ore below the surface of the Tiger Claims but apparently the ore shoot in the Collins Vein peters out before it reaches the line of the Tiger Claims and unless recent work has changed the situation since 1937 or '38 there is no reason to believe that any such ore goes into the Tiger ground. Apparently the Collins vein carries lead and copper.

December 15th, 1943

Mr. William Miller
Higley, Arizona

Re: Mammoth Extension Mine

Dear Mr. Miller:

I acknowledge your letter of the 11th Instant and thank you very much for the check for $150.00 enclosed therewith. This entirely completes payment of the fee agreed upon for my services and report.

I can assure you that it was a matter of sincere regret that I could not make my report more favorable or encouraging. I certainly wish that I could be of some service to you and your associates in helping you recover a part of your investment.

By all means drop in to talk the matter over anytime that it is convenient for you to do so, as I shall be only too pleased to discuss the situation whenever I am here in Phoenix.

I hope you are having some good success on your fishing trips, and I shall look forward to renewing our pleasant personal acquaintance when opportunity permits.

Sincerely,

GMC/b

Ripley Wyo.
Dec. 11, 1943

@ 12/11/43

Dear Sir.

Recieved your report some days ago. While it is discouraging, it does confirm my inward suspicions. There have been a good many stories told about this property that you have proven false.

I would like to talk to you a little about it and will try to get you on the phone some day when I have time and you are not too busy.

I am sending check for balance of your fee

Yours truly

W. Wilson

R. F. C. Form E-254
(Revised 9-23-40)

APPLICATION FOR A DEVELOPMENT LOAN

NOTE.—Read carefully Reconstruction Finance Corporation Circular No. 14 (revised) and this application form before starting to prepare application.

RECEIVED
MAR 9 - 1942
MINING SECTION

Application of

(NAME) MAMMOTH-TIGER EXTENSION MINING COMPANY,

(ADDRESS)

(CITY AND STATE) TIGER, ARIZONA.

For a Development Loan under authority of Section 14 of Public, No. 417, Seventy-third Congress, as amended.

The application should be prepared and executed in duplicate; one counterpart should be accompanied by a complete set of exhibits, including maps, reports, and all other documents called for; the other should be accompanied by a set of exhibits complete except for supporting maps, assay reports, and other documents of which it is difficult to obtain more than one copy; each counterpart with exhibits should be fastened in a separate binder and sent to Reconstruction Finance Corporation, 811 Vermont Avenue NW., Washington, D. C.

Name and address of applicant should be stamped or typed on each sheet of application, and on all accompanying papers, for identification. If any space in any exhibit is not large enough to permit giving full information, such information should be typewritten on attached sheets of paper labeled, lettered, and numbered to correspond with the respective exhibit, section, and subsection.

B-ND-3912

Date FEBRUARY 19, 1942.

Name of correspondent ROY N. BAIRD, President, MAMMOTH-TIGER EXTENSION MINING CO.

Address of correspondent 3763 Sixth Avenue, Los Angeles, California.

Location of mine: County PINAL State ARIZONA Mineral or metal produced Lead, Copper, Zinc, Molybdenum, Vanadium, Gold and Silver.

Does this application pertain to the production of strategic and critical minerals? YES (Yes or no)

MAMMOTH-TIGER EXTENSION MINING COMPANY, (hereinafter called "applicant"),

a Corporation (Corporation, individual, partnership), hereby applies to RECONSTRUCTION FINANCE CORPORATION (hereinafter called "R. F. C."), for a loan of not more than $ 20,000.00 to be evidenced by a note or notes satisfactory to R. F. C. and secured as required by R. F. C.

To induce R. F. C. to make such loan, applicant submits as part of this application the attached exhibits, A to D, inclusive, and such other exhibits and papers as are attached hereto, and warrants and represents the statements herein and therein to be true and complete.

Applicant represents that applicant is not, at the time of making this application, indebted to R. F. C. in any amount, and neither the applicant nor any other party on applicant's behalf has heretofore applied to R. F. C. for a loan, except as follows:

NONE

Applicant hereby authorizes all constituted Federal, State, municipal, and other authorities at all times and from time to time to permit representatives of R. F. C. to have full access to and to furnish R. F. C. with any and all information, records, reports, returns, and files pertaining to or filed by or on behalf of applicant.

Dated February 19, 1942.

(Sign below)

WITNESS: [signature]

Roy N Baird.
President and General Manager

WITNESS: Cornelia H. Balaz

Wm Miller
Secretary and Treasurer

(Corporate application to be executed by the President and Secretary with corporate seal affixed; partnership application to be executed by a general partner)

16—4062

R. F. C. Form L-255
(Revised 9-28-40)

EXHIBIT A

General Information

1. NATURE OF BUSINESS: Describe briefly the type of operation being conducted.
Mining and shipping ore to the mill and smelters.

2. LOAN:

(a) Amount of loan applied for: $ 20,000.00

(b) Full statement of necessity for loan: The Corporation has insufficient funds for the development of this mine.
(See Exhibit A, Item2, b pg.1)

3. PURPOSES OF LOAN: Specific purposes for which applicant proposes to expend proceeds of loan applied for. (Detailed information should be given.)

Nature of Expenditure	Amount	Percent
	$	
Development work and necessary equipment to carry on the production of this mine in the manner that it should be done is fully covered on an attached yellow sheet marked, Exhibit A, Item 3.		
	$	

4. HISTORY, MANAGEMENT, ETC.: This subject should be fully covered and should include the following information: A brief statement of previous development and operation of the mining property; statement as to exact nature of applicant's interest in or ownership of the property, including date and circumstances under which acquired; if applicant or the mining property offered as security for the loan has been involved in receivership, reorganization proceedings, or bankruptcy, or if applicant has made an assignment for the benefit of, or effected a compromise with creditors, discuss fully; a full statement of the facts disclosing that applicant is engaged in the development of a mining property which comes within the purview of the Act, and all pertinent facts regarding the mining business of the applicant and the management thereof, including the manager's mining experience. See attached sheet, yellow section, marked Exhibit A, Item 4

5. CLAIM UNDER WAR MINERALS RELIEF ACT: If a claim has been filed under the War Minerals Relief Act involving the property or the applicant, explain in detail, stating amount of claim filed and amount recovered, if any. If no such claim has been filed, so state. None

6. LOCATION: Give State, county, and mining district in which property is situated. If on surveyed ground, give section, township, and range. Give name of and distance to railroad station.
State of Arizona, Pinal County, Old Hat Mining District, or otherwise known as the Mammoth Mining District. The nearest railroad is at Winkelman, Arizona, which is 21 miles north of the property. This is fully covered in Attached yellow section Exhibit A Item 6 pg. 2

7. MINING PROPERTY:

(a) Names and legal survey numbers of all patented claims or claims surveyed for patent. (Include claim map.) Maps attached in back section

(b) Names, dates of location, place and date of recording, book and page record of all unpatented locations. See attached yellow section Exhibit A item 6

(c) Description of acreage or placer ground, and recording data.

(d) Names of any adjoining or neighboring productive properties. Mammoth, Collins, Mohawk, and New Year

8. OPERATION:

(a) Are operations being carried on at present time? If so, describe operations including number of men employed. None

(b) If operations are not now being carried on or have not been continuous, give dates of suspension and resumption of operations, reasons for such suspensions, and description of most recent operations. See Report pg. 2 "History"

EXHIBIT A
16—4062

Mammoth-Tiger Extension Mining Co.
Tiger, Arizona

9. If Applicant is a Corporation, Supply the Following:

(a) General information:

1. Principal office and place of business Tiger, Arizona (Street and number),

Tiger (City), Arizona (State)

2. When organized. Incorporated the 13 th day of August, 1941.

3. Under what laws organized. The Arizona Corporation Commission, State of Arizona.

4. Names of States in which qualified to do business. Arizona

(b) Name and addresses of officers, directors, and ten largest stockholders:

Name and address	Official title (if officer is also director indicate by "D")	Annual salary, commissions, bonuses, etc., received from applicant and/or affiliates during last fiscal year	Number of shares held	
			Common	Preferred
Roy N. Baird, 3763 - 6th Ave., L. A. Calif.	Pres. "D"	None	6,000	
William Miller, Higley, Arizona	Sec. & Treas. "D"	"	14,127	
William Ward, Tiger, Arizona	Vice-Pres. "D"	"	8,000	
H. F. Hensel, Los Angeles, Calif.	Director	"	7,323	
C. T. Wrightson, Burbank, Calif.	"	"	3,308	
J. L. Ames, Burbank, Calif.	Stockholder	"	7,199	
Ed. M. Balsz, Los Angeles, Calif.	"	"	3,120	
R. D. Cassell, San Leandro, Calif.	"	"	6,088	
W. R. Fulton, Glendale, Calif.	"	"	2,790	
There are 20 stockholders holding approximately				
Total 100,000 shares of stock 50,000 shares remain in treasury.				

(c) Capital stock issues: 150,000 shares

	Authorized	Outstanding	Par value	Number of shares	Dividend rate	
					Last paid	Fixed by charter
Common stock	$150,000.00	$100,000.00	$1.00 per share	100,000	None	x x x
Preferred stock						

(d) Articles, bylaws, etc.—Copies of Articles of Incorporation, bylaws, and certificates of authority to do business, with all amendments to date, certified and sworn to by applicant's Secretary, all to be attached hereto as Exhibit "E". Enclosed find Articles of Incorporation with corporate Seal notarized by Secretary.

10. If Applicant is a Partnership, Supply the Following:

(a) Names and addresses of all partners:

Name (Indicate if any partners are limited or special partners)	Address

(b) Affidavits and agreements.—Copies of all partnership affidavits and agreements, certified and sworn to by the partner signing the application, all to be attached hereto as Exhibit "E".

11. Taxes:

Amounts of all Federal, State, municipal, and other taxes and assessments:

(a) Delinquent at the time of the filing of this application.

(b) Levied or assessed each year for the past 3 years.

See attached yellow section pg. 2 Exhibit A, Item 11, b

Mammoth-Tiger Extension Mining Co.
Tiger, Arizona

R. F. C. Form L-256
(Revised 9-23-40)

EXHIBIT B

Technical Data

The data required by Exhibit B should be supplied in detail on separate sheets of paper attached at end of this Exhibit Data should be lettered and numbered to correspond with respective paragraphs below

A. REPORTS: Furnish any reports available that apply to this application, including results from any metallurgical investigations. All reports and maps are enclosed with this application, including maps of underground workings, assays, and letter of explanation.

B. METAL OR MINERAL: State metal or mineral to be produced. Applicant must present evidence of definite markets for products other than gold and silver which will be produced during the life of the loan, with location and capacity of each market and sales prices.

See yellow section pg. 3, Exhibit B, Item B.

C. GEOLOGY AND TOPOGRAPHY: Submit all available information and maps. Geology and topography have been fully covered in the report. All maps available ~~have been~~ are here submitted.

D. EXISTING DEVELOPMENT:

1. Furnish all possible information with regard to the ore body or mineral deposit. If maps and sections of the mine or placer are not available, pencil sketches are acceptable. However, such sketches should, if possible, be drawn to scale, or if not, dimensions must be shown. **Give results of sampling, stating clearly how samples were taken, giving width and location of each sample. Show the location, value, and width of sample on maps submitted.** For placer deposits give the values obtained from each shaft or drill hole and state how the values were determined. Show the estimated yardage and value.

   See attached yellow section Exhibit B, Item D on page 4.

2. Submit certificates, when available, giving analysis of each sample and number each sample to correspond with sample numbers on the maps submitted.

3. State type of mine, whether tunnel or adit, shaft, open-cut, placer, drift, etc., and show in detail the amount of development work. State distance along vein between levels and to surface. Indicate condition of workings, noting necessary repairs, if any.

   See attached Maps. No repairs are necessary. All levels are dry, and well ventilated. Working conditions are excellent.

4. List present equipment on property and describe condition.

   Hoist, small compressor, ore cars, blacksmith equipment, jack hammer, 500 ft. of rails & air and water line in shaft. All in good working condition.

E. PROPOSED DEVELOPMENT:

1. State clearly and in detail the work proposed and show the expected tonnage or yardage and values that will be developed by this work. Estimate the cost of producing and marketing the product.

   See attached yellow section pg. 5 Exhibit B, Item E, number 1

2. State recent daily, monthly, and annual production (if any) and estimated production if loan is granted.

   See attached yellow section pg. 5 Exhibit B, Item E, number 1

3. State whether workings are dry or wet; if latter, amount of water that has to be pumped, gallons per minute, to keep water down. This mine is dry on all levels.

F. MARKETING OF PRODUCT: Explain fully whether the product produced is milled on the property, shipped to custom mill or smelter, or shipped direct to the mint, or otherwise marketed. In any case, supply all cost data with regard to marketing.

See attached yellow section pg. 6 Exhibit B Item G.

G. WATER SUPPLY: State whether water supply for all proposed operations is sufficient during all seasons of year. State amount in gallons per minute, miners' inches, or second-feet. If available, state the maximum, minimum, and average flow. Describe the source of the water supply, its dependability, water rights, etc.

H. POWER: State kind and source of power proposed to be used in operating the property.

Diesel and gasoline power. Electricity is available from adjoining property.

I. COST: State past (if mine has been in operation) and estimated future:

1. Detailed mining cost per ton, or per cubic yard of product and per foot of development work.

   See attached yellow section pg. 5 Exhibit B, Item 1, number 1

2. Detailed milling cost.

   Mill and smelter cost on copper ore is $3.50 per ton
   " " " " " lead " "$4.75 " "

NOTE.—No charge is made for the preliminary field examination of a property by this Corporation's Supervising Engineer. However, if a loan is made, the cost of the examination is reimbursable from the loan. An examination will not be authorized, unless data submitted with the application reveal that the property warrants development.

Mammoth-Tiger Extension Mining Co.
Tiger, Arizona

16—4062

R. F. C. Form L-257
(Revised 9-23-40)

EXHIBIT C

Current Financial Statement

As of

February 19, 1942.

(It is desired that this should be not more than 30 days prior to date of application)

Assets	
CURRENT ASSETS:	
1. Cash	$ None
2. Notes receivable	"
3. Accounts receivable	"
4. Inventories, materials on hand, etc. 1 Comp. $600 Jack Hammer $250	
1 Hoist 400 Blacksmith	
Ore cars & rails 300 Eqp. 200	2,000.00
TOTAL CURRENT ASSETS Small Mine Tools 250	2,000.00
FIXED AND OTHER ASSETS:	
5. Plant used in business — Lands Five mining claims	500,000.00
Buildings on property	500.00
Ores	
6. Machinery As listed above	
7. Equipment, furniture, fixtures, etc.	
TOTAL ASSETS	502,500.00
Liabilities	
CURRENT LIABILITIES:	
8. Notes payable	None
9. Accounts payable	"
10. Other current liabilities	"
	"
11. Liabilities accrued but not yet payable (interest, rent, taxes, wages, payments due on account of leases, options, or other contracts, etc.)	"
TOTAL CURRENT LIABILITIES	None
FIXED AND OTHER LIABILITIES:	
12. Mortgage debt, etc.	None
13. Contracts for lease, royalty, or purchase which constitute charges:	"
14. Other liabilities (describe)	"
TOTAL LIABILITIES	None
15. Contingent liabilities (describe)	None

INSTRUCTIONS.—In addition to the foregoing statement, attach a copy of latest balance sheet; also state terms of notes payable, mortgage debts, etc., giving maturity dates, rate of interest, etc.; and describe any other liens which would rank prior to the proposed loan.

EXHIBIT D

Fees, Commissions, Etc.

(No fees or commissions shall be paid by applicant for the purpose of procuring a loan, but reasonable compensation may be paid for proper services actually and necessarily rendered to applicant. If an application is granted it is to be expected that prior to disbursement the Corporation will require that it be furnished with certificates and agreements from applicant and from persons retained to render services to applicant, in form satisfactory to the Corporation, that all compensation shall be subject to the approval of the Corporation.)

All fees, commissions, salaries, charges, compensation, and things of value paid or delivered, or agreed to be paid or delivered, or contemplated to be hereafter paid or delivered by or on behalf of applicant in connection with the application and/or any loan granted are as follows:

Name	Description of services	Amount paid	Amount agreed or contemplated to be paid
None	None	$ None	$ None

U. S. GOVERNMENT PRINTING OFFICE 16—4062

Mammoth-Tiger Extension Mining Co.
Tiger, Arizona.

Exhibit A, Number 2, Item b

Full Statement of Necessity for Loan

The reason for this loan is to develop water, purchase necessary equipment and cover development work which is fully stated in the following paragraph:

Exhibit A, Item 3

One Year Development Program

The following estimate includes all underground labor:

On number 2 level, 150 ft. east on lead ore,	$ 900.00
On number 3 level, 200 ft. crosscut west	1200.00
On number 3 level, 300 ft. crosscut east	1800.00
On number 4 level, 200 ft. on copper to fault	1200.00
On number 4 level, 200 ft. drift on lead ore	1200.00
Labor for hoist man, and blacksmith and top man	3600.00
General Manager	2400.00
Superintendent	2400.00
Office help	1200.00
Two-hundred foot well above fault(price includes casing)	600.00
One 3 h. p. pump engine	110.00
One water tank	75.00
Three-hundred feet of one inch pipe (Water line)	50.00
1500 feet of one inch pipe (water line in mine)	135.00
1500 feet of two inch air line	330.00
One drifter steel and shell	500.00
One ore bin	400.00
Pump and jack for water supply	100.00
Drill steel	200.00
Light truck for hauling supplies	400.00
Change house	200.00
Office building	100.00
One used hot head compressor	800.00
Insurance	100.00
TOTAL -	$20,000.00

Exhibit A, Item 4

History of Management, etc.

The Mammoth-Tiger Extension Mine is well developed and has approximately 1,400 ft. of underground workings. The Mammoth-Tiger Extension Mining corporation holds a clear title to this property, was purchased from the original owner in August, 1941. This property has never been involved in receivership, bankruptcy or labor liens. It has no indebtedness whatsoever.

In regard to the management of this property, Roy N. Baird has been in the mining business for the past 12 years and has operated a mineralology and assaying laboratory for the past 7 years.

Mammoth-Tiger Mining Co.
Tiger, Arizona

continued

William Ward, the Vice-President, will have complete charge of all underground mining operations. He has been a mine superintendent for the past 18 years working continuously for some of the larger mining companies in Arizona and Nevada. For the past 3½ years he has had the position as underground superintendent for the Mammoth, Collins and Mohawk Companies. These properties join the Mammoth-Tiger Extension on the east. Mr. Ward is considered a very efficient man and comes to us with a very high recommendation as to honesty and ability.

Exhibit A, Item 6

There are five mining claims now owned by the Mammoth-Tiger Extension Corporation located in Pinal County, State of Arizona, Old Hat Mining District, or otherwise known as the Mammoth Mining District. These claims are recorded in Florence, Arizona, the County seat, Book 46, pages 611 and 612, and book 50, pages 495 and 524. They are claims 1 to 5 respectively, recorded as follows:

Old Glory No. 1 location recorded July 1, 1931, Bk. 46, pg. 612 1,000 ft. in a northeasterly direction by 500 ft. in a southwesterly direction from the monument.

Old Glory No. 2 location recorded July 1, 1931, Bk. 46 pg. 612. 1,400 ft. in a northwesterly direction and 100 ft. in a southeasterly direction from the monument.

Old Glory No. 3 location recorded Feb. 1, 1939 Bk. 50 pg. 495. The monument is 1/2 mi. west of the Mammoth St. Anthony shaft. The claim is 200 ft. in a northwesterly direction and 1, 300 ft. in a southeasterly direction from the monument.

Old Glory No. 4 location recorded Feb. 1, 1939 Bk. 50, pg. 524. It is 750 ft. northwesterly by 750 ft. southeasterly from the monument.

Old Glory No. 5 location recorded Feb. 1, 1939 Bk. 50 pg. 524 is 1,400 ft. in a southeasterly direction and 100 ft. in a northwesterly direction from the monument.

The deeds of the above claims are all recorded in Bk. 6 of the mining deeds at page 473 thereof, recorded in the office of the County Recorder of Pinal County, State of Arizona.

Exhibit A, Item 11, b

Due to the fact that this corporation was organized in August, 1941, we have no record of the taxes for the past three years(This property was purchased, a clear title being receieved on August 24, 1941)

All government taxes, revenue taxes, and all social security have been paid up to date.

Mammoth-Tiger Extension Mining Co.
Tiger, Arizona

AMERICAN SMELTING AND REFINING COMPANY
SOUTHWESTERN ORE PURCHASING DEPARTMENT
810 VALLEY BANK BUILDING
P. O. BOX 2229
TUCSON, ARIZONA

BRENT N. RICKARD
MANAGER

February 24, 1942

Mr. R. M. Baird, President
Mammoth-Tiger Extension Mining Co.
3763 Sixth Avenue
Los Angeles, California

Dear Sir:

Confirming conversation in my office today:

I am pleased to hand you herewith three copies each of Hayden and El Paso schedules outlining terms under which we will purchase your shipments of ore from the Old Glory Claims near Tiger in the Old Hat Mining District, Pinal County, Arizona.

We will accept your shipments beginning at once under the terms of these schedules or we will embody these terms in a firm contract for a period of one, two, or three years.

Awaiting your further pleasure,

Yours very truly,

Brent N. Rickard

BRENT N. RICKARD

Encs.
2 ex. cc.

1M 1-40 CAIRNS

American Smelting and Refining Company

HAYDEN, ARIZONA

SCHEDULE F

Date Effective February 24, 1942

Mine OLD GLORY CLAIMS Location Tiger, Old Hat District, Pinal Co., Arizona

Shipper MAMMOTH-TIGER EXT. MINING CO. Address R.M. Baird, President, 3763 6th Ave., Los Angeles, Calif.

Character Ore SILICEOUS R. R. Station Truck to Smelter

The following terms are subject to the General Clauses shown on the back of this sheet, and are subject to prompt acceptance. Unless shipments are begun within 30 days this quotation is automatically cancelled.

PAYMENTS

GOLD: If 3/100 of an ounce per dry ton or over pay for all at the rate of $ 19.50 per Troy ounce, plus 90% of the realized gold premium in excess of $20.67 per Troy ounce. Under present Government net realized price ($34.9125), this is equivalent to $ 32.31825 per Troy ounce.

SILVER: Pay for 95% (minimum deduction of ½ ounce) at the average Handy & Harman New York Silver quotations for the calendar week, including date of arrival of last car of each lot at plant of Buyer, or, if higher, at the realized Mint price provided silver qualifies for Government purchase and affidavit is furnished, less a deduction in either case of 1½c per ounce. Present Mint price is 70 5/8c per ounce.

COPPER: Deduct from the wet copper assay eight pounds, and pay for ninety-five per cent of the remaining copper at the daily net refinery quotations for electrolytic cathodes as published in the Engineering and Mining Journal of New York averaged for the calendar week including date of arrival of last car of each lot at the plant of the Buyer less a deduction of 2.5725 cents per pound of copper accounted for. Nothing paid for copper if less than one-half per cent by wet assay.

No payment will be made for any metal or content except as above specified.

DEDUCTIONS

BASE CHARGE: $ 3.50 per net dry ton of 2,000 pounds; provided the sum of payments for gold, silver, lead and copper does not exceed $ 15.00 per ton. Add to the base charge ten per cent of the excess over $ 15.00 to a maximum charge of $ 5.00 per dry ton.

Add 50¢ per ton for handling truckload shipments.

The base charge just specified is for ores containing at least eight pounds of copper per ton; when a smaller quantity is contained, there will be added to the base charge a sum equivalent to the value of the deficiency between actual contents and eight pounds per ton computed according to the terms specified herein for copper payment.

INSOLUBLE: Allow all units free; charge for the excess at cents per unit, fractions in proportion.

ZINC: Allow five units free; charge for the excess at thirty cents per unit, fractions in proportion.

ALUMINA: 10% of the silica content will be allowed free. Alumina in excess of this amount will be charged for at 25¢ per unit, fractions in proportion.

ARSENIC: Allow two units free; charge for the excess at $0.50 per unit, fractions in proportion.

ANTIMONY: Allow one unit free; charge for the excess at $1.50 per unit, fractions in proportion.

BISMUTH: One-tenth of one per cent will be allowed free. The excess will be charged at fity cents ($0.50) per pound, fractions in proportion.

MOISTURE: A minimum deduction of one per cent will be made from wet weight; when over one per cent contained the actual moisture will be deducted.

DELIVERY: F. O. B. unloading bins American Smelting and Refining Company, Hayden, Arizona.

TAXES: Deduct Federal or State taxes, import duties, stamps and/or other charges now or hereafter imposed.

FREIGHT: All railroad freight and delivery charges for account of seller. Deduct from settlement freight and other advances made by Buyer.

TONNAGE: Limited to 250 tons per month except by special arrangement.

AMERICAN SMELTING AND REFINING COMPANY

By Brent N. Rickard
BRENT N. RICKARD

(over)

General Clauses Governing All Open Schedules

1. Weighing, moisture and ore sampling (at which seller or a representative may be present) as done by Buyer according to standard practice, promptly after receipt of product, will be accepted as final. The absence of seller or a representative shall be deemed a waiver of the right in each instance. After sampling, the product may be placed in process, commingled, or otherwise disposed of by Buyer. In case of disagreement on assays, an umpire shall be selected in rotation from a list mutually agreed upon, whose assays shall be final if within the limits of the assays of the two parties; and if not, the assay of the party nearer to the umpire shall prevail. Losing party shall pay cost of umpire. In case of Seller's failure to make or submit assays, Buyer's assays shall govern.
2. All schedules on ore not under contract for a definite period of time are subject to change without notice.
3. The rates quoted herein are for carload lots. On any lot containing one ton or less, there will be a sampling and handling charge of $10.00. This charge will be decreased by $1.00 for each ton in excess of one ton.
4. The rates quoted apply only to ore in bulk. Fifty cents per ton additional will be charged for ore in sacks, to cover extra cost of handling.
5. In the event quotation date should fall on a legal Holiday or one upon which no quotation is issued, the next succeeding quotation will be used in settlement.
6. In this schedule where the word "ton" is used, it is understood to be a ton of two thousand pounds avoirdupois; where the word "ounce" is used, as referring to gold and silver, it is understood to mean the troy ounce; and where the word "unit" is used, it is understood to mean one per cent of a ton, or twenty pounds avoirdupois.
7. In order that delivery of the ore at our plant may not be unnecessarily delayed, we make it a general rule that THE FREIGHT CHARGES MUST BE PREPAID OR GUARANTEED BY THE SHIPPER.
8. The rates quoted herein are based on present existing scale for common labor at the Hayden Plant, and present published all rail freight rates on lead and copper bullion from Hayden, Arizona, to New York City. Any increase or decrease is for account of Seller, and proper deduction or credit shall be made accordingly.

AMERICAN SMELTING AND REFINING COMPANY

Hayden, Arizona.

(over)

1M 5-41 CAIRNS

American Smelting and Refining Co.

EL PASO SMELTING WORKS
EL PASO, TEXAS

SCHEDULE A

Date Effective Feb. 24, 1942

Mine OLD GLORY CLAIMS Location Tiger, Old Hat Mining District, Pinal Co., Ariz.

Shipper MAMMOTH-TIGER EXT. MINING CO. Address R.M.Baird, President, 3763-6th Ave. Los Angeles, Calif.

Character Ore LEAD-SILICEOUS R. R. Station Winkelman, Ariz.

The following terms are subject to the General Clauses shown on the back of this sheet, and are subject to prompt acceptance. Unless shipments are begun within 30 days this quotation is automatically cancelled.

PAYMENTS

GOLD: If .03 of an ounce per dry ton or over pay for all at $19.50 per Troy ounce, plus 90% of the realized gold premium in excess of $20.67 per Troy ounce.

Under present Government price the above is equivalent to paying for 92.5693% @ $34.9125 per Troy ounce., or 100% @ $32.31825.

SILVER: Pay for 95% at the average Handy & Harman New York silver quotations for the calendar week including date of delivery of the last car of each lot at plant of Buyer, or if higher, at the realized Mint price provided silver qualifies for Government purchase and affidavit is furnished, less a deduction in either case of 1½¢ per ounce.

Minimum deduction one Troy ounce per dry ton.

LEAD: Deduct from the wet lead assay 1.5 units and pay for 90% of the remaining lead at the average of the daily published quotations of the A. S. & R. Co. for common desilverized domestic lead for delivery in New York City for the calendar week including date of delivery of last car of each lot at Plant of Buyer, less a deduction of 1.56 cents per pound of lead accounted for. Nothing paid for lead if less than 3% by wet assay.

COPPER: Deduct from wet copper assay 1.0 unit and pay for 100% of the remaining copper at the daily net refinery quotations for electrolytic cathodes, as published in the E&MJ. Metal & Mineral Markets of New York averaged for calendar week preceding date of delivery of last car of each lot at Plant of Buyer. less a deduction of 6.0 cents per pound of copper accounted for. Nothing paid for copper if less than 1.0% by wet assay.

No payment will be made for any metal or content except as above specified.

DEDUCTIONS

BASE CHARGE: $3.50 ~~$2.50~~ per net dry ton of 2000 pounds, ~~based on 30% settlement lead content~~. (Wet assay less 1.5 units).

Deduct from the base charge 10¢ per dry ton for each unit of lead above 30%, ~~and add 10¢ per dry ton for each unit of lead under 30%~~, fractions in proportion.

for values to $15 per ton plus 10 dry of the excess over $15 to maximum base charge of $5.00 per ton

INSOLUBLE: Allow 40 units free; charge for excess at 5 cents per unit, fractions in proportion.

ZINC: 5% free. Excess charged at 30¢ per unit, fractions in proportion.

ARSENIC: 2% free. Excess charged at 50¢ per unit, fractions in proportion.

ANTIMONY: 1% free. Excess charged at $1.50 per unit, fractions in proportion.

BISMUTH: One-tenth of one percent (0.1%) of the lead content by wet assay allowed free, excess charged at 50¢ per pound, fractions in proportion.

SULPHUR: 2% free. Excess charged at twenty-five cents per unit, fractions in proportion. Maximum charge, $2.50 per net dry ton.

MOISTURE: A minimum deduction of 1% will be made from wet weight; when over 1% contained actual moisture will be deducted.

DELIVERY: F. O. B. unloading bins American Smelting and Refining Company, El Paso, Texas.

The rates quoted are based upon shipment of crude ores in dump bottom gondola equipment. Extra unloading charge of 25¢ per dry ton will be assessed for crude ores received in box cars or solid bottom gondola cars.

All truck shipments whether crude ore or concentrates will be assessed an extra handling charge of 50¢ per dry ton.

TAXES: Deduct Federal or State taxes and/or other charges now or hereafter imposed.

FREIGHT: All railroad freight and delivery charges for account of shipper. Deduct from settlement freight and other advances made by Buyer.

TONNAGE: Limited to 250 tons per month except by special arrangement.

AMERICAN SMELTING AND REFINING COMPANY

By Brent N. Rickard
BRENT N. RICKARD

(over)

Exhibit B Item B

Mammoth-Tiger Extension Mining Co.,
Tiger, Arizona

Exhibit B Item D 1.

Certificates of assays by Baverstock and Payne are attached to this application. These assays were run for the metals listed only. Silver, vanadium, molybdenum, and zinc determinations were not made on any of the samples submitted.

Sample 1.

Gold 70¢, Lead $40.32
Total per Ton $41.02 on metals tested for
This sample was taken by chipping a 1inch by 5 ft. strip across a section of the face of the ore deposit located on level No. 2 approximately 18 ft. n north of manway.

Sample 2.

Gold 70¢, copper $17.14
Total per Ton $24.97 per ton on metals tested for.
This sample was a chipped sample 1 in. by 8 ft. across the face of the ore deposit located on No. 3 level approximately 37 ft. north of the shaft.

Sample 3.

Gold $19.25, copper $9.24
Total $48.66 per ton on metals tested for.
This sample was taken on No. 4 level approximately 27 ft. south of the shaft. It was chipped from a face representative of the ore throughout this tunnel.

The present known ore body extends from approximately 15 ft. from the top of the manway to the 200ft. level, showing on all levels. The ore is widening and increasing in value as it goes down. This has been substantiated by many assays.

In regard to ore deposits, the maps are marked red where the ore shows on the face. The location where samples were taken will be ma marked on the maps in blue. These maps are drawn to scale and dem dimentions are furnished.

Mammoth-Tiger Extension Mining Co.
Tiger, Arizona

Exhibit B, Item E, Number 1

In Exhibit A, Item 3, you will find in detail the development work proposed to be carried out in the next year.

As to the tonnage that will be developed by this work, note the following estimates:

No. 2 level, approximately 150 tons of from 12 to 15% lead ore, value.....	$ 3,300.00
No. 3 level, approximately 1,000 tons of lead ore of from 12 to 15% value.....	22,000.00
No. 3 level, approximately 700 tons of from 4 to 5%, copper ore, value.....	9,100.00
No. 4 level, approximately 500 tons of lead ore, 12%, value	11,000.00
No. 4 level, 3,330 tons of lead ore from 12 to 15% value	73,260.00
No. 4 level, 1,325 tons from 4 to 5% copper ore, value.....	17,225.00
Total	$135,885.00
Production Cost Estimated	70,000.00
Balance	$ 65,885.00

(Mining, truck haul, freight charges, milling and smelting costs are included in the above estimate)

This ore will cost approximately $6.00 per ton to mine as listed below:

Cost of ore to Mine

Powder	-	.20 per ton	
Timber	-	.60 " "	
Compressor & Hoist	-	.50 " "	
Steel	-	.15 " "	
Overhead	-	.25 " "	
Labor	-	1.50 " "	
		$ 3.20 " "	$3.20

Cost of Development Work

Powder	-	.20 per ton	
Timber	-	.60 " "	
Compressor & Hoist	-	.50 " "	
Steel	-	.15 " "	
Overhead	-	.25 " "	
Labor	-	1.10 " "	
		$ 2.80 " "	2.80
		Total.....$	6.00

(See note yellow section pg. 7)

The mill and smelter charges on copper ore is $3.50 per ton.
" " " " " " lead " " $4.75 " "

Exhibit B Item F

All ore will be hauled to Winkleman at a cost of $2.00 per ton
Copper ore will be sold directly to smelter at Winkleman. Milling and smelter charges are $3.50 per ton.
Lead ore will be shipped to El Paso from Winkleman. The freight charges on 40% ore are $4.30 per ton. Smelter charge on lead ore at El Paso is $4.75 per ton. (continued below) ***

Exhibit B Item G

At present there is no water on this property, due to the fact that the south fault cuts across the upper end of the property in a northeasterly direction. There are springs above this fault but the solid formation does not permit the water to come through. We propose to drill a 200 ft. well with 6 in. casing, above the so. fault approximately 300 ft. from the collar of the mine. This will be on company property. We will install a pump and tank which will give ample water supply for all needs the year around. The surrounding properties have abundant water.

Note

You will notice in the list of our machinery that we have a small portable Chicago Pneumatic Compressor listed. This compressor is not sufficient to carry on the development work that we propose to do. We can purchase a large heavy duty Hot-Head compressor in excellent condition for $800.00. We believe this would be a very wise investment.

In regard to the merit of this property, I noticed in the December 1941 "Engineering and Mining Journal" an article on the Mammoth-St. Anthony Mining Company. Their production up to the year 1936 was exceeding five million dollars. We have no data on this property since 1936 but they are mining and milling approximately 760 tons of ore every working day of the year.

The mining camp of Mammoth has a population of 17,000 .

We see no reason why the Mammoth-Tiger Extension cannot be developed into a property of similar proportions.

Tariff Ratings
Exhibit B Item F(continued) ***

The freight tariff No. S.P. 160 on lead ore from Winkelman to El Paso is as follows:

The Tariff	on	$15	ore	is	$3.40
"	"	20	"	"	3.70
"	"	30	"	"	4.00
"	"	40	"	"	4.30
"	"	50	"	"	4.60

Note referring to Exhibit B, Item E, Number 1

The figures presented in this application relating to the cost of mining and mine development were prepared by Mr. Wm. Ward, who, as underground superintendant in the mines of the Mammoth Mining District, has specialized in developing mines with this type of formation for the past 18 years.

Mammoth-Tiger Extension Mining Co.
Tiger, Arizona

Expenditures from June to October 1941

Labor	$ 2,960.46
Insurance	108.30
Lumber	858.45
Taxes including revenue stamps	241.22
Hardware and Machine work	354.03
Gasoline & oil	294.62
Powder and caps	57.91
Hauling	73.15
Pipe & equipment	163.67
Misc. expenses	84.50
Total	$ 5,196.31

The above expense was incurred in installing machinery, erecting new head frame, timbering shaft, mucking out all levels and winzes, installing new ladders and platforms in manways and erecting buildings on the property.

The above has all been paid for by the corporation.

Suspension of operations in October was due to the lack of funds.

LABORATORY TESTING
ULTRA-VIOLET DETERMINATIONS
ASSAYING RESEARCH
ELECTROLYTIC SEPERATION
SPECTOGRAPHIC ANALYSIS

MINING
MINERALOGY SURVEY
MILL CONSTRUCTION & TESTING
FLOW SHEET FOR ALL MINERALS

Roy N. Baird
3763 6TH AVE., LOS ANGELES, CALIF.
TELEPHONE AXMINSTER 5993

Feb. 21, 1942

Reconstruction Finance Corporation,
811 Vermont Avenue NW.,
Washington, D.C.

Dear Sirs:

We estimate our present valuation at $500,000.00 on the property of the Mammoth-Tiger Extension Mining Co. on the known evidence of the existence of a large ore deposit in the vicinity of our shaft on claims No. 1 and 2.

Our own diggings show the presence of an ore deposit as indicated in our report and on our maps, which are included in our application.

On the extreme east of claim No. 4, which joins the Mammoth St. Anthony properties, a large ore deposit was opened up on the 600 ft. and 700 ft. levels. They stopped mining in this district when they discovered they were over on our property. These ore faces can be inspected from the Mammoth St. Anthony workings.

It is interesting to note that the ore in this vicinity runs above average in values as compared to the surrounding workings in the Mammoth Mining District.

Sincerely yours,

Roy N Baird

President and Gen. Manager
Mammoth-Tiger Extension Mining Co.

LABORATORY TESTING
ULTRA-VIOLET DETERMINATIONS
ASSAYING RESEARCH
ELECTROLYTIC SEPERATION
SPECTOGRAPHIC ANALYSIS

MINING
MINERALOGY SURVEY
MILL CONSTRUCTION & TESTING
FLOW SHEET FOR ALL MINERALS

Roy N. Baird

3763 6TH AVE., LOS ANGELES, CALIF.
TELEPHONE AXMINSTER 5993

A large number of assays were run on this property at the time of purchase. However, the Certificates are mot in our posession.

Lead assays ran from 5.7% to 31.3%
Copper " " " 5.8% " 10.6%
Gold increases in the deeper levels running from .01 to .54%

Zinc, molybdenum, vanadium, and silver show in profitable quantities in some of the assays. We will be unable to reclaim these minerals prior to the installation of a mill.

A. L. PELLEGRIN & SON
FORMERLY FOR 6 YEARS U. S. ASSAYERS
ASSAYERS AND CHEMISTS

TESTING FOR THE RARE METALS AND MINERALS, CYANIDE AND OTHER METALLURGICAL LABORATORY TESTS

339 SO. STONE AVE.
TUCSON, ARIZONA

ASSAY AND ANALYSIS CERTIFICAT

MR. Mammoth Tiger Ext.

Mar. 2nd

NO. OR MARKS	FIRE ASSAY—PER TON				CHEMICAL ANALYSIS — PER CENT					
	Gold oz.	Val. at $	Silver oz.	Val. at	Copper %	@ 17	Lead %	@ 9 1/4		@
A.		$		$	0.49	$1.67				
B		$		$	3.63	12.34				
C		$		$	2.67	9.08	3.33	$6.16		
D		$		$			34.10	63.08		
E		$		$	2.10	7.14				
		$		$						
		$		$						
		$		$						
		$		$						
		$		$						

AMOUNT $6.00 cd

A L Pellegrin &

No. 255 Ma

Phoenix, Arizona,
Feb. 26, 1942.

CHAS. A. DIEHL

ARIZONA ASSAY OFFICE

Phone 3-4001 — 815 [redacted] North First Street — P. O. Box 1148

This Certifies That samples submitted for assay by Mammoth Tiger Extension Mg. Co. contain as follows per ton of 2000 lbs. Avoir.

MARKS	SILVER Ounces	SILVER Tenths	VALUE (Oz.)	GOLD Ounces	GOLD Hundths	VALUE (Oz.)	TOTAL VALUE Of Gold and Silver	% PERCENTAGE LEAD	REMARKS
1 A		.3		.02		$.70		..21	this assay
2 B		.4		.02		$.70		Trace	was not Run
3 C	Trace			Trace				Trace	for Copper
4 D	11	.8	$8.37	.03		$1.05		24.52 %	

Charges $ 8.00 Paid

Assayer ARIZONA ASSAY OFFICE

C. A. D

RALPH S. BAVERSTOCK

ASSAYING
MILL TESTS
AMALGAMATION
CONCENTRATION
CYANIDATION
FLOTATION

SINCE 1900

Baverstock & Payne

CHEMISTS, ENGINEERS AND METALLURGISTS
552 SOUTH FIGUEROA STREET, LOS ANGELES, CAL.
TELEPHONE VANDIKE 6044

LEONARD G. PITCHFORD, M. S.

CHEMICAL ANALYSIS OF
ORES, MINERALS, METALS,
DRUGS, FOODS, FORMULAES,
OILS AND WATER.

CERTIFICATE OF ASSAY

CERTIFICATE NO. 9464

WE HEREBY CERTIFY THAT WE HAVE ASSAYED THE SAMPLES SUBMITTED TO US BY R.N. Baird

DATE Feb. 19, 1942

Mammoth-Tiger Extension Mining Co., Tiger, Arizona

SAMPLE MARKED	GOLD		SILVER		Lead	Copper			
	OZ. TROY PER TON	VALUE PER TON	OZ. TROY PER TON	VALUE PER TON	%	%	%	VALUE PER TON	TOTAL VALUE PER TON
		$		$				$	$
NO. 1	.02	.70			22.4			40.32	41.02
2	.02	.70				Copper 7.14		24.27	24.97
3	.55	19.25				9.24		29.41	48.66

MARKET VALUES

GOLD PER OZ.	SILVER CTS. PER OZ.	CTS. PER LB.	CHARGES $
$35.00		Lead 9 Copper 17	

BAVERSTOCK & PAYNE

BY Leonard Pitchford

ESTA L. BAYLESS
RECORDER

EDWYNA B. DEVINE
CHIEF DEPUTY

COUNTY RECORDER

PINAL COUNTY
STATE OF ARIZONA
FLORENCE

February 24, 1942

TO WHOM IT MAY CONCERN:

I have searched the records of my office and find the following:

Old Glory, and Old Glory #2, dated 7/1/31, located by Miller Wallis were recorded 7/27/31 in Book 46 of Mines Pages 611 and 612.

Old Glory #3, located 2/1/39 by Miller Wallis, was recorded in Book 50 of Mines Page 495.

Old Glory #4, and Old Glory #5 located 2/1/39 by Miller Wallis were recorded in Book 50 of Mines Page 529.

All above Locations in the Old Hat Mining District.

On July 7, 1941, said mining claims were deed over to J. E. Dietrich. Said deed recorded July 15, 1941 in Book 6 of Mining Deeds, Page 473.

On August 1941, said Mining Claims were assigned, transferred and set over to Mammoth-Tiger Extension Mining Co, in whose name they now stand. Recorded 9/8/41 Book 23 of Miscellaneous records Page 20.

Yours truly,

Esta L. Bayless
Pinal County Recorder

By Ann Maki
Deputy

STATE OF ARIZONA

ss

County of Maricopa

AFFIDAVIT

William Miller being first duly sworn deposes and says:

That he is the Secretary of the Mammoth-Tiger Extension Mining Company of Tiger, Arizona.

That the foregoing copy of the Original Articles of Incorporation of such Corporation is a true and correct copy of such Articles of Incorporation as the same appears in the files of the Corporation and a true and correct copy also of such Articles of Incorporation as the same appears of record in the office of the County Recorder of Pinal County, Arizona, and in the offices of the Corporation Commission of the State of Arizona at Phoenix, Arizona.

Wm Miller

Subscribed and sworn to before me this 26 day of February, 1942, by William Miller.

George S. Cowden
Notary Public

My Commission Expires: My Commission Expires April 27, 1943

MAMMOTH-TIGER EXTENSION MINING CO.

CORPORATE RECORDS

Represented by
United States Corporation Company
Phoenix, Arizona

Mammoth-Tiger Extension Mining Co.
Tiger, Arizona

STATE OF ARIZONA

ARIZONA

CORPORATION GREAT SEAL OF THE STATE OF ARIZONA Ditat Deus COMMISSION

To all to Whom these Presents shall Come, Greetings:

BE IT KNOWN THAT

MAMMOTH-TIGER EXTENSION MINING CO.

HAVING SUBMITTED TO THE ARIZONA CORPORATION COMMISSION EVIDENCES OF COMPLIANCE WITH THE LAWS OF THE STATE OF ARIZONA GOVERNING THE INCORPORATION OF COMPANIES, IS, BY VIRTUE OF THE POWERS VESTED IN THE COMMISSION UNDER THE CONSTITUTION AND THE LAWS OF THE STATE OF ARIZONA, HEREBY GRANTED THIS

CERTIFICATE OF INCORPORATION
(Subject to the filing of Affidavit of Publication)

AUTHORIZING SAID COMPANY TO EXERCISE THE FUNCTIONS OF A CORPORATION, UNDER THE LAWS NOW IN EFFECT IN THE STATE OF ARIZONA, AND, SUBJECT TO SUCH LAWS AS MAY HEREAFTER BE ENACTED, FOR A PERIOD OF TWENTY-FIVE YEARS FROM THE DATE HEREOF, UNLESS SOONER REVOKED BY AUTHORITY OF LAW.

BY ORDER OF THE ARIZONA CORPORATION COMMISSION.

IN WITNESS WHEREOF, I, W. M. Cox, THE CHAIRMAN, HAVE HEREUNTO SET MY HAND AND CAUSED THE OFFICIAL SEAL OF THE ARIZONA CORPORATION COMMISSION TO BE AFFIXED AT THE CAPITAL, IN THE CITY OF PHOENIX, THIS 13th DAY OF AUGUST, A.D., 1941.

W. M. COX
Chairman

Willis G. Ethel
Secretary

D. Palmer
Assistant Secretary

ARTICLES OF INCORPORATION

OF

MAMMOUTH-TIGER EXTENSION MINING CO.

KNOW ALL MEN BY THESE PRESENTS:

That we, the undersigned, having associated ourselves together for the purpose of forming a corporation under the laws of Arizona, do hereby adopt the following Articles of Incorporation;

ARTICLE I. The name of the corporation shall be

MAMMOTH-TIGER EXTENSION MINING CO.

ARTICLE II. Its principal place of business within Arizona shall be Phoenix, Maricopa County, but other offices may be established or maintained within or without Arizona at such places as the stockholders or the Board of Directors may designate, where meetings of stockholders and directors may be held and any and all corporate business transacted.

ARTICLE III. The general nature of the business proposed to be transacted is, to-wit:

To carry on the business of mining, milling, concentrating, converting, smelting, treating, preparing for market, manufacturing, buying, selling, exchanging and otherwise producing and dealing in all kinds of ores, metals, minerals and in the products and by-products thereof of every kind and description, by whatsoever process the same can be or may hereafter

be produced; to buy, sell, exchange, lease, prospect for and locate and otherwise acquire, and deal in and operate lands, mines, minerals, rights and claims; to guarantee contracts entered into between other corporations or persons at its request or in or for its interest or benefit; and generally, without limitation, to conduct and carry on any and all business pertaining to any of the foregoing, or which may seem to the corporation capable of being conveniently carried on in connection with any of the foregoing, or calculated, directly any of the corporation's property or rights, temporarily or permanently; and to have, enjoy and exercise all the rights, powers and privileges which are now or which may hereafter be conferred upon corporations organized under the laws of the State of Arizona; and to do all or any of said things in the State of Arizona; or in any part of the world;

The foregoing clause shall be construed both as objects and powers; and it is hereby expressly provided that the foregoing enumeration of specific powers shall not be held to limit or restrict in any manner the powers of this corporation.

ARTICLE IV. The total authorized capital stock of this corporation is One Hundred and Fifty Thousand Dollars ($150,000.00) divided into One Hundred and Fifty Thousand (150,000) shares of common stock of the par value of One Dollar ($1.00) per share. The time when and the conditions upon which it is to be paid in shall be determined from time to time by the Board of Directors. When issued as fully paid up stock of this corporation, said stock shall be forever non-assessable.

ARTICLE V. The commencement of the corporation shall be the date of the issuance to it of a Certificate of Incorporation by the Arizona Corporation Commission,

and it shall endure for the full term of twenty-five years thereafter, with the privilege of perpetual succession as provided by statute.

ARTICLE VI. The affairs of the corporation shall be conducted by a Board of Directors and such officers as the said directors may elect or appoint. The number of directors shall be designated by the by-laws and shall be elected by the stockholders at their annual meeting to be held on the first Monday of February in each year. Until the first annual meeting of stockholders and until their successors shall have been elected and have qualified, the following named persons shall be the directors:

NAMES	OFFICES
Elwood Dietrich, Tiger, Arizona,	President and Director
Wm. Miller, Higley, Arizona,	Vice-President and Director
Wm. Ward, Tiger, Arizona,	Secretary, Treasurer and Direct

ARTICLE VII. The highest amount of indebtedness or liability to which the corporation may at any one time subject itself is One Hundred Thousand Dollars, ($100,000.00) provided that indebtedness heretofore or hereafter authorized by not less than three-fourths of the votes cast in accordance with the provisions of these Articles of Incorporation and by-laws of the corporation at any lawfully held regular or special meeting of the stockholders of this corporation

and approved by the Corporation Commission of the State of Arizona shall not be subject to the limitations herein prescribed and shall not be considered a part of the indebtedness so limited.

ARTICLE VIII. The private property of the stockholders of the corporation shall be forever exempt from its debts or obligations.

ARTICLE IX. This corporation does hereby appoint Lawrence L. Howe of Phoenix, Arizona, who has been a bona fide resident of Arizona for at least three years, its lawful agent in and for the State of Arizona for and in behalf of said corporation, to accept and acknowledge service of, and upon whom may be served, all necessary process and processes in any action, suit or proceeding, that may be had or brought against the said corporation in any of the courts of said State of Arizona, such service of process or notice, or the acceptance thereof by said agent endorsed thereon, to have the same force and effect as if served upon the President and Secretary of said corporation.

ARTICLE X. The names, post office addresses and residences of the incorporators are as follows:

NAMES	POST OFFICE ADDRESSES
Lawrence L. Howe	703 Luhrs Tower Phoenix, Arizona
Louis B. Whitney	703 Luhrs Tower Phoenix, Arizona
Margaret E. Case	703 Luhrs Tower Phoenix, Arizona

IN WITNESS WHEREOF, we have hereunto affixed our signatures this day of August, 1941.

LAWRENCE L. HOWE L.S.

LOUIS B WHITNEY L.S.

MARGARET E. CASE L.S.

STATE OF ARIZONA)
) SS.
COUNTY OF MARICOPA)

Before me, a Notary Public in and for the County and State aforesaid, on this day personally appeared Lawrence L. Howe, Louis B. Whitney and Margaret E. Case, known to me to be the same persons who signed the foregoing instrument and acknowledged to me that they executed the same for the uses and purposes therein mentioned.

GIVEN under my hand and seal of office this day of August, 1941.

Notary Public in and for the County of Maricopa, State of Arizona

My commission expires:

Mammoth-Tiger Extension Mining Co.
Tiger, Arizona

Mammoth-Tiger Extension Mining Co.
Tiger, Arizona

KEY TO ASSAYS

THAT are attached to this application. All assays were chipped samples across faces as listed below.

All proposed development work is plainly marked on the attached maps of the second, third and fourth levels.

Sample No.	Levels	Manways	Face	Location
1		7' under #3 level	7'	
2	Fourth		5'	12' N. of shaft
3	Fourth		4'	8' S. of shaft
1-A	Fourth		6'	13' S. of shaft
2-B	Fourth		3½'	22' N. of shaft
3-C	Third		13'	South end of cross cut.
4-D	Third	16' above landing	4'	
A	Fourth		6'	16' S. of shaft
B	Fourth		4'	12' S. side of drift
C	Fourth		5'	31' from manway
D	Third	3½' face under manway	3½'	
E	Third		4' face side of cross cut south end of drift	

Mammoth-Tiger Extension Mining Co.
Tiger, Arizona

STATE OF ARIZONA

ss

County of Maricopa

AFFIDAVIT

William Miller being first duly sworn deposes and says:

That he is the Secretary of the Mammoth-Tiger Extension Mining Company of Tiger, Arizona.

That the foregoing copy of the original By-laws of such Corporation is a true and correct copy of such By-laws as the same appear in the files of the Corporation and a true and correct copy also of such By-laws as the same appears of record in the offices of the Corporation Commission of the State of Arizona at Phoenix, Arizona.

Wm Miller

Subscribed and sworn to before me this 26 day of February, 1942, by William Miller.

George S. Cowden.

My Commission Expires: My Commission Expires April 27, 1943

MAMMOTH-TIGER EXTENSION MINING CO.

BY-LAWS

ARTICLE I

Stockholders

Section 1. Place of Holding Annual Meetings.--Annual meetings of the stockholders shall be held at the office of the corporation in the City of Tiger, in the State of Arizona, or may be held at any place within or without the State of Arizona which the directors may, from time to time, designate.

Section 2. Annual Election of Directors.--The annual meeting of stockholders for the election of directors and the transaction of other business shall be held on the first Monday of February in each year at 2:00 o'clock P.M. If this date shall fall upon a legal holiday, the meeting shall be held on the next succeeding business day. At each annual meeting, the stockholders entitled to vote shall by plurality vote, by ballot, elect a board of directors and they may transact such other corporate business as shall be stated in the notice of the meeting.

Section 3. Voting.---Each stockholder entitled to vote in accordance with the terms of the Articles of Incorporation and in accordance with the provisions of these by-laws shall be entitled to one vote, in person or by proxy, for each share of stock entitled to vote held by such stockholder, but no proxy shall be voted after three (3) years from its date unless such proxy provides for a longer period. After the first election of directors, except where the transfer books of the corporation shall have been closed or a date shall have been fixed as the record date for the determination of its stockholders, entitled to vote, as hereinafter provided, in Section 4 of Article VI, no share of stock shall be voted on at any election for directors which shall have been transferred on the books of the corporation, within twenty days next preceding such election. The vote for directors, and, upon the demand of any stockholder, the vote upon any question before the meeting shall be by ballot. All elections shall be had and all questions decided by plurality vote except as otherwise provided by the Articles of Incorporation and/or by the laws of the State of Arizona.

Section 4. Quorum.--Except as provided in the next section hereof, any number of stockholders together holding at least fifty-one per cent (51%) of the stock issued and outstanding and entitled to vote thereat, who shall be present in person or represented by proxy at any meeting duly called shall constitute a quorum for the transaction of business.

Section 5. Adjournment of Meetings.--If less than a quorum shall be in attendance at any time for which the meeting shall have been called, the meeting may, after the lapse of at least half an hour, be adjourned from time to time by a majority of the stockholders present or represented and entitled to vote thereat. If notice of such adjourned meeting is sent to the stockholders entitled to receive the same, such notice also containing a statement of the purpose of the meeting and that the previous meeting failed for lack of a quorum, and that under the provisions of this Section, it is proposed to hold the adjourned meeting with a quorum of those present, then any number of stockholders, in person or by proxy, shall constitute a quorum at such meeting unless otherwise provided by statute and provided also that if one-fourth (1/4) of the outstanding capital stock shall object in writing to the holding of any such meeting, then and in that event such meeting shall not be valid unless at least fifty-one per cent (51%) of the outstanding capital stock is present or represented at the meeting.

Section 6. Special Meetings; How Called.--Special meetings of the stockholders for any purpose or purposes may be called by the President or Secretary, and shall be called upon a requisition in writing therefor, President or Secretary, signed by a majority of the directors or by twenty per cent (20%) in interest of the stockholders entitled to vote, or by resolution of the directors.

Section 7. Notice of Stockholders' Meetings.--Written or printed notice, stating the place and time of the meeting, and the general nature of the business to be considered, shall be given by the Secretary to each stockholder entitled to vote thereat at his last known post-office address, at least ten (10) days before the meeting in the case of an annual meeting, and ten (10) days before the meeting in the case of a special meeting.

No business other than that stated in the notice shall be transacted at any meeting without the unanimous consent of all the stockholders entitled to vote thereat.

Section 8. Consent of Absentees.--- The transactions of any meeting of stockholders either annual or special, however called and noticed, shall be as valid as though had at a meeting duly held after regular call and notice, if a quorum be present either in person or by proxy, and if, either before or after the meeting, each of the stockholders entitled to vote, not present in person or by proxy, sign a written waiver of notice, or a consent to the holding of such meeting, or an approval of the minutes thereof. All such waivers, consents or approvals shall be filed with the corporate records or made a part of the minutes of the meeting.

Section 9. Action without Meeting.--Any action, which under the provisions of the law may be taken at a meeting of the stockholders, may be taken without a meeting if authorized by a writing signed by all of the holders of shares and filed with the Secretary of the corporation.

Section 10. Suspension of Powers of Directors or Officers.--The holders of a majority in interest of the issued and outstanding stock of the corporation, by serving written notice on the President and the Secretary of the corporation, or by resolution passed at any meeting of stockholders, may remove summarily any officer or director without cause or may also, without cause, suspend the power of any and all directors and officers of the corporation for any period of time and in like manner, a majority in interest of the issued and outstanding capital stock of the corporation may designate any such suspension of powers at any time.

Section 11. Prohibitive Powers.--The stockholders of the corporation may prohibit any proposed action of the Board of Directors or of any officer or employee by serving written notice of their disapproval upon the Board of Directors or the President and Secretary of the corporation signed by the holders of a majority in interest of the outstanding capital stock of the corporation.

ARTICLE II

Section 1. Number, Term, Quorum.--The number of directors shall be not less than three (3) nor more than seven (7). The directors shall be elected at the annual meeting of the stockholders and each director shall be elected to serve until his successor shall be elected and shall qualify; provided that in the event of failure to hold

such meeting or to hold such election at such meeting, it may be held at any special meeting of the stockholders called for that purpose. Directors need not be stockholders.

A majority of the directors shall constitute a quorum for the transaction of business. If at any meeting of the Board there shall be less than a quorum present, a majority of those present may adjourn the meeting from time to time until a quorum is obtained and no further notice thereof need be given other than by announcement at said meeting which shall be so adjourned.

Section 2. Increase in Number of the Board of Directors.--The number of the members of the Board of Directors may be increased from time to time by action of the Board of Directors or by a meeting of the stockholders duly called for that purpose, but not to exceed a total of seven (7) in number.

Section 3. First Meeting.--The newly elected directors may hold their first meeting for the purpose of organization and the transaction of business, if a quorum be present, immediately after the annual meeting of the stockholders; or the time and place of such meeting may be fixed by consent in writing of all the directors.

Section 4. Election of Officers.--At the first meeting, or at any subsequent meeting called for the purpose, the directors shall elect a President from their number, one or more Vice-Presidents, a Treasurer and/or an Assistant Treasurer, and a Secretary and/or an Assistant Secretary, who need not be directors. Such officers shall hold office until the next annual election of officers and until their successors are elected and qualify.

Section 5. Regular Meetings.--Regular meetings of the Board of Directors may be held without notice at such places and times as shall be determined from time to time by resolution of the directors.

Section 6. Special Meetings; How Called; Notice.--Special meetings of the Board may be called by the President or by the Secretary on the written request of any two directors on one (1) day's notice to each director.

Section 7. Waiver of Notice.--The transactions of any meeting of the Board of Directors, however called and noticed, or wherever held, shall be as valid as though had at a meeting duly held after regular call and notice, if a quorum be present, and if, either before or after, the meeting, each of the directors not present sign a written waiver of notice or a consent to holding such meeting or an approval of the Minutes thereof. All such waivers, consents or approvals shall be filed with the corporate records or made a part of the minutes of the meeting.

Section 8. Place of Meeting.--The directors may hold their meetings and have one or more offices, and keep the books of the corporation, outside the State of Arizona, at any office or offices of the corporation, or at any other place as they may from time to time by resolution determine.

Section 9. General Powers of Directors.--The Board of Directors shall have the management of the business of the corporation, and, subject to the restrictions imposed by law, by the Articles of Incorporation or by these By-Laws, may exercise all the powers of the corporation.

Section 10. Specific Powers of Directors.--Without prejudice to such general powers, it is hereby expressly declared that the directors shall have the following powers, to-wit:

(1) To adopt and alter a common seal of the corporation.

(2) To make and change regulations, not inconsistent with these by-laws, for the management of the corporation's business and affairs.

(3) To purchase or otherwise acquire for the corporation any property, rights or privileges which the corporation is authorized to acquire.

(4) To pay for any property purchased for the corporation whether wholly or partly in money, stock, bonds, debentures or other securities of the corporation.

(5) To borrow money and to make and issue notes, bonds and other negotiable and transferable instruments, mortgages, deeds of trust and trust agreements, and to do every act and thing necessary to effectuate the same.

(6) To remove any officer for cause, or any officer other than the President summarily without cause, and in their discretion from time to time to develop the powers and duties of any officer upon any other person for the time being.

(7) To appoint and remove or suspend such subordinate officers, agents or factors as they may deem necessary and to determine their duties, and fix, and from time to time change their salaries or remuneration and to require security as and when they think fit.

(8) To confer upon any officer of the corporation the power to appoint, remove and suspend subordinate officers, agents and factors.

(9) To determine who shall be authorized on the corporation's behalf to make and sign bills, notes, acceptances, endorsements, checks, releases, receipts, contracts and other instruments.

(10) To determine who shall be entitled to vote in the name and behalf of the corporation upon, or to assign and transfer, any shares of stock, bonds, or other securities of other corporations held by this corporation.

(11) To delegate any of the powers of the Board in relation to the ordinary business of the corporation to any standing or special committee or to any officer or agent (with power to sub-delegate), upon such terms as they think fit.

(12) To call special meetings of the stockholders for any purpose or purposes.

Section 11. Compensation of Directors.--No director, officer, agent or employee of this corporation shall be entitled to any compensation of any kind, either by salary or by other remuneration, for any services rendered or proposed to be rendered to this corporation unless the terms and conditions thereof shall have been previously

fixed by resolution of the Board of Directors at a meeting duly convened or when authorized in writing by a majority thereof.

ARTICLE III

Committees

Section 1. The Board of Directors may, by resolution or resolutions passed by a majority of the whole board, designate one or more committees, each committee to consist of two or more of the directors of the corporation, which to the extent provided in said resolution or resolutions or in these by-laws, shall have and may exercise the powers of the Board of Directors in the management of the business and affairs of the corporation, and may have power to authorize the seal of the corporation to be affixed to all papers which may require it. Such committee or committees shall have such name or names as may be stated in these by-laws or as may be determined from time to time by resolution adopted by the Board of Directors.

Section 2. The committees shall keep regular minutes of their proceedings and report the same to the Board when required.

ARTICLE IV

Officers

Section 1.--The officers of the corporation, in addition to the directors, shall be a President, one or more Vice-Presidents, a Secretary, an Assistant Secretary, a Treasurer, an Assistant Treasurer, a General Manager, a Mill Superintendent and a Mine Superintendent, and the corporation may, in addition to the other officers named, have a Chairman of the Board, and such other officers as may from time to time be elected or appointed by the Board of Directors. One person may hold the offices of Secretary and Treasurer or Vice-President and Secretary or Vice-President and Treasurer.

Section 2. Chairman of the Board.--The Chairman of the Board, when present, shall preside at all meetings of the Board of Directors and at all meetings of the stockholders and he shall have power to call special meetings of stockholders and directors for any purposes.

Section 3. President.--The President shall, when present, preside at all meetings of the directors and act as Chairman at, and call to order all meetings of the stockholders; and he shall have power to call special meetings of the stockholders and directors for any purpose or purposes; he shall see that the books, reports, statement and certificates required by the statute under which this corporation is organized or any other laws applicable thereto are properly made, kept and filed, according to law; and he shall generally do and perform all acts incident to the office of President or which are authorized or required by law.

Section 4. Vice-President.--Each Vice-President shall have such powers and shall perform such duties as shall be assigned to him by the directors.

Section 5. Secretary.--The Secretary shall give or cause to be given notice of all meetings of stockholders and directors, and all other notices required by law or by these by-laws, and in case of his absence or refusal or neglect so to do, any such notice may be given by any person thereunto directed by the President, or by the directors or stockholders upon whose requisition the meeting is called as provided in these by-laws. He shall record all the proceedings of the meetings of the corporation and of the directors in a book to be kept for that purpose, and shall perform such other duties as may be assigned to him by the directors or the President. He shall affix the corporate seal to all instruments requiring it, when authorized by the directors or the President and attest the same; he shall, unless otherwise determined by the directors, have charge of the original stock books, transfer books and stock ledgers, and act as transfer agent in respect of the stock and securities of the corporation; and he shall perform all of the other duties incident to the office of Secretary.

Section 6. Treasurer.--The Treasurer shall have the custody of all funds, securities, evidences of indebtedness and other valuable documents of the corporation; he shall receive and give or cause to be given receipts and acquittances for moneys paid in on account of the corporation and shall pay out of the funds on hand all just debts of the corporation of whatever nature upon maturity of the same; he shall enter or cause to be entered in books of the corporation to be kept for that purpose, full

and accurate accounts of all moneys received and paid out on account of the corporation, and whenever required by the President or the directors, he shall render a statement of his cash accounts; he shall keep or cause to be kept such other books as will show a true record of the expenses, losses, gains, assets and liabilities of the corporation.

Section 7. General Manager.--The General Manager shall have general and exclusive charge and management of the operations, business and affairs of the corporationbut at all times subject to the control of the Board of Directors; he shall have charge of and supervise the properties, operations and business of the corporation and in conjunction with the President shall have charge of all employees of the corporation and prescribe their duties. He shall have such other powers and perform such other duties as shall from time to time be delegated or assigned to him by the directors and shall have power to appoint and discharge, subject to the approval of the directors, employees and agents of the corporation and fix their compensation, and have such other duties as the Board of Directors shall from time to time delegate to him.

Section 8. Mill Superintendent.--The Mill Superintendent shall have charge of the operations of the mill and the installation of all necessary equipment therein. He shall assume all duties incident to such office and shall have such other duties as shall from time to time be prescribed by the Board of Directors.

Section 9. Mine Superintendent.--The Mine Superintendent shall have charge of the operations and development of the mine and shall undertake extension and development of the mining properties. He shall assume all duties incident to such office and shall have such other duties as shall from time to time be prescribed by the Board of Directors.

ARTICLE V

Resignations; Filling of Vacancies; Increase of Number of Directors

Section 1. Resignations.--Any director, member of a committee or other officer may resign at

any time. Such resignation shall be made in writing and shall take effect at the time specified therein, and if no time be specified, at the time of its receipt by the President or Secretary. The acceptance of a resignation shall not be necessary to make it effective.

Section 2. Filling of Vacancies.--If the office of any director, member of a committee or other officer becomes vacant, the remaining directors in office, though less than a quorum, by a majority vote, may appoint any qualified person to fill such vacancy, who shall hold office for the unexpired term and until his successor shall be duly chosen.

Section 3. Increase of Number of Directors.--The number of directors may be increased at any time by the affirmative vote of a majority of the directors or by the affirmative vote of a majority in interest of the stockholders at a special meeting called for that purpose, and by like vote, the additional directors may be chosen at such meeting to hold office until the next annual election and until their successors are elected and qualify.

ARTICLE VI

Capital Stock

Section 1. Certificate of Stock.--Certificates of stock, numbered and with the seal of the corporation affixed, signed by the President or Vice-President, and the Treasurer or any Assistant Treasurer, or Secretary, or an Assistant Secretary, shall be issued to each stockholder, certifying the number of shares owned by him in the corporation.

Section 2. Lost Certificates.--A new certificate of stock may be issued in the place of any certificate theretofore issued by the corporation, alleged to have been lost or destroyed and the directors may, in their discretion, require the owner of the lost or destroyed certificate, or his legal representative, to give the corporation a bond, in such sum as they may direct, not exceeding double the value of the stock, to indemnify the corporation against any claim that may be made against it on account of the alleged loss of any such certificate.

Section 3. Transfer of Shares.--The shares of stock of the corporation shall be transferable only upon its books by the holders thereof in person or by their duly authorized attorneys or legal representatives, and upon such transfer, the old certificate shall be surrendered to the corporation by the delivery thereof to the person in charge of the stock and transfer books and ledgers, or to such other person as the directors may designate, by whom they shall be cancelled, and new certificates shall thereupon be issued.

Section 4. Closing of Transfer Books.--The Board of Directors shall have power to close the stock transfer books of the corporation for a period not exceeding forty days preceding the date of any meeting of stockholders or the date for payment of any dividend; provided however, that in lieu of closing the stock transfer books as aforesaid, the Board of Directors may fix in advance a date, not exceeding forty days preceding the date of any meeting of stockholders or the date for the payment of any dividend, as a record date for the determination of the stockholders entitled to notice of, and to vote at, any such meeting, or entitled to receive payment of any such dividends and in such case, such stockholders only as shall be stockholders of record on the date so fixed shall be entitled to such notice of, and to vote at, such meeting, or to receive payment of such dividends, notwithstanding any transfer of any stock on the books of the corporation after any such record date fixed as aforesaid.

Section 5. Dividends.--Subject to the provisions of the Articles of Incorporation, if any, the directors may declare dividends upon the capital stock of the corporation as and when they deem expedient. Before declaring any dividend, there may be set apart out of any funds of the corporation available for dividends, such sum or sums as the directors from time to time in their discretion think proper for working capital or as a reserve fund to meet contingencies or for equalizing dividends, or for such other purposes as the directors shall think conducive to the interests of the corporation.

ARTICLE VII

Miscellaneous Provisions

Section 1. Corporate Seal.--The corporate seal shall be circular in form and shall contain the name of the corporation, the year of its creation, and the words, "INCORPORATED, ARIZONA". Said seal may be used by causing it or facsimile thereof to be impressed or affixed or reproduced or otherwise. The custody of the corporate seal shall from time to time be determined by resolution of the Board of Directors.

Section 2. Fiscal Year.--The fiscal year of the corporation shall be the calendar year.

Section 3. Principal Office.--The principal office shall be established and maintained at the office of the United States Corporation Company, 703 Luhrs Tower, in the City of Phoenix, County of Maricopa, State of Arizona, and said corporation shall be the resident agent of the corporation in charge thereof. The principal office may be changed at any time by the Board of Directors.

In addition to the principal office in Phoenix, Arizona, the corporation may establish one or more additional offices within or without the State of Arizona for the transaction of its business.

Section 4. Checks, Drafts, Notes.--All checks, drafts or other orders for the payment of money, notes, or other evidences of indebtedness issued in the name of the corporation shall be signed by such officer or officers, agents, or agent of the corporation and in such manner as shall from time to time be determined by resolution of the Board of Directors.

Section 5. Notice and Waiver of Notice.--Whenever any notice is required by these by-laws to be given, personal notice is not meant unless expressly so stated; and any notice so required shall be deemed to be sufficient if given by depositing the same in a post office bos in a sealed post paid wrapper, addressed to the person entitled thereto at his last known post-office address and such

notice shall be deemed to have been given on the date of such mailing. Any notice required to be given under these by-laws may be waived by the person entitled thereto. Stockholders not entitled to vote shall not be entitled to receive notice of any meetings except as otherwise provided by statute.

ARTICLE VIII

Amendments

Section 1. Amendment of By-Laws.--The stockholders, by the affirmative vote of the holders of a majority of the stock issued and outstanding may at any meeting, provided the substance of the proposed amendment shall have been stated in the notice of the meeting, amend or alter any of these by-laws, or the directors, by the affirmative vote of a majority of the directors, may at any meeting, amend or alter any of these by-laws.

Mammoth Zinc - Samples

#	Level	Location	Width	Au oz	Ag oz	Cu %	Pb %
1	3rd	7' under #3 level	7	0.02	—	—	22.4
2	4th	12' N of shaft	5'	0.02	—	7.14	—
3	"	8' south of shaft	4	0.55	—	9.24	—
1. A	4th	13' S of shaft	6	0.02	0.30	—	0.21
2 B	"	22' N of shaft	3.5'	0.02	0.40	—	tr.
3 C.	3rd	S. end of X cut	13'	tr	tr	—	tr
4 D.	"	16' above landing	4'	0.03	11.8	—	24.52
A.	4th.	16' S of shaft	6'	—	—	0.49	—
B.	"	12' S side of shaft	4	—	—	3.63	
C	"	31' for tramway	5	—	—	2.67	3.33
D.	Surface	3.5' face under tramway	3.5'	—	—	—	34.10
E	"	face of X cut at S end of shaft	4	—	—	2.10	—

Tailings were measured and sampled in 1934 for the Valley Bank who were considering a loan to Jay Burns. Work was done by Woodlaw and Brinkerhoff of the Inspiration Copper Company and their report is not available but might be secured from the Valley Bank officials or from Tom O'Brien of the Inspiration.

AMERICAN SMELTING AND REFINING COMPANY
SOUTHWESTERN ORE PURCHASING DEPARTMENT
810 VALLEY BANK BUILDING
P. O. BOX 2229
TUCSON, ARIZONA

BRENT N. RICKARD
MANAGER

February 24, 1942

Mr. R. M. Baird, President
Mammoth-Tiger Extension Mining Co.
3763 Sixth Avenue
Los Angeles, California

Dear Sir:

Confirming conversation in my office today:

I am pleased to hand you herewith three copies each of Hayden and El Paso schedules outlining terms under which we will purchase your shipments of ore from the Old Glory Claims near Tiger in the Old Hat Mining District, Pinal County, Arizona.

We will accept your shipments beginning at once under the terms of these schedules or we will embody these terms in a firm contract for a period of one, two, or three years.

Awaiting your further pleasure,

Yours very truly,
Brent N. Rickard
BRENT N. RICKARD

Encs.
2 ex. cc.

AMERICAN SMELTING AND REFINING COMPANY
SOUTHWESTERN ORE PURCHASING DEPARTMENT
810 VALLEY BANK BUILDING
P. O. BOX 2229
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Encs.
2 ex. cc.

1M 5-41 CAIRNS

American Smelting and Refining Co.

EL PASO SMELTING WORKS
EL PASO, TEXAS

SCHEDULE A

Date Effective Feb. 24, 1942

Mine OLD GLORY CLAIMS Location Tiger, Old Hat Mining District, Pinal Co., Ariz.

Shipper MAMMOTH-TIGER EXT. MINING CO. Address R.M.Baird, President, 3763-6th Ave. Los Angeles, Calif.

Character Ore LEAD-SILICEOUS R. R. Station Winkelman, Ariz.

The following terms are subject to the General Clauses shown on the back of this sheet, and are subject to prompt acceptance. Unless shipments are begun within 30 days this quotation is automatically cancelled.

PAYMENTS

GOLD: If .03 of an ounce per dry ton or over pay for all at $19.50 per Troy ounce, plus 90% of the realized gold premium in excess of $20.67 per Troy ounce.

Under present Government price the above is equivalent to paying for 92.5693% @ $34.9125 per Troy ounce., or 100% @ $32.31825.

SILVER: Pay for 95% at the average Handy & Harman New York silver quotations for the calendar week including date of delivery of the last car of each lot at plant of Buyer, or if higher, at the realized Mint price provided silver qualifies for Government purchase and affidavit is furnished, less a deduction in either case of 1½¢ per ounce.

Minimum deduction one Troy ounce per dry ton.

LEAD: Deduct from the wet lead assay 1.5 units and pay for 90% of the remaining lead at the average of the daily published quotations of the A. S. & R. Co. for common desilverized domestic lead for delivery in New York City for the calendar week including date of delivery of last car of each lot at Plant of Buyer, less a deduction of 1.56 cents per pound of lead accounted for. Nothing paid for lead if less than 3% by wet assay.

COPPER: Deduct from wet copper assay 1.0 unit and pay for 100% of the remaining copper at the daily net refinery quotations for electrolytic cathodes, as published in the E&MJ. Metal & Mineral Markets of New York averaged for calendar week preceding date of delivery of last car of each lot at Plant of Buyer. less a deduction of 6.0 cents per pound of copper accounted for. Nothing paid for copper if less than 1.0% by wet assay.

No payment will be made for any metal or content except as above specified.

DEDUCTIONS

BASE CHARGE: ~~$2.50~~ $3.50 per net dry ton of 2000 pounds, ~~based on 30% settlement lead content.~~ (Wet assay less 1.5 units).

Deduct from the base charge 10¢ per dry ton for each unit of lead above 30%, ~~and add 10¢ per dry ton for each unit of lead under 30%~~, fractions in proportion. for values to $15 per ton plus 10% of the excess over $15 to maximum base charge of $5.00 per ton dry

INSOLUBLE: Allow 40 units free; charge for excess at 5 cents per unit, fractions in proportion.

ZINC: 5% free. Excess charged at 30¢ per unit, fractions in proportion.

ARSENIC: 2% free. Excess charged at 50¢ per unit, fractions in proportion.

ANTIMONY: 1% free. Excess charged at $1.50 per unit, fractions in proportion.

BISMUTH: One-tenth of one percent (0.1%) of the lead content by wet assay allowed free, excess charged at 50¢ per pound, fractions in proportion.

SULPHUR: 2% free. Excess charged at twenty-five cents per unit, fractions in proportion. Maximum charge, $2.50 per net dry ton.

MOISTURE: A minimum deduction of 1% will be made from wet weight; when over 1% contained actual moisture will be deducted.

DELIVERY: F. O. B. unloading bins American Smelting and Refining Company, El Paso, Texas.

The rates quoted are based upon shipment of crude ores in dump bottom gondola equipment. Extra unloading charge of 25¢ per dry ton will be assessed for crude ores received in box cars or solid bottom gondola cars.

All truck shipments whether crude ore or concentrates will be assessed an extra handling charge of 50¢ per dry ton.

TAXES: Deduct Federal or State taxes and/or other charges now or hereafter imposed.

FREIGHT: All railroad freight and delivery charges for account of shipper. Deduct from settlement freight and other advances made by Buyer.

TONNAGE: Limited to 250 tons per month except by special arrangement.

AMERICAN SMELTING AND REFINING COMPANY

By Brent N. Rickard
BRENT N. RICKARD

(over)

General Clauses Governing All Open Schedules

1. Weighing, moisture and ore sampling (at which seller or a representative may be present) as done by Buyer according to standard practice, promptly after receipt of product, will be accepted as final. The absence of seller or a representative shall be deemed a waiver of the right in each instance. After sampling, the product may be placed in process, commingled, or otherwise disposed of by Buyer. In case of disagreement on assays, an umpire shall be selected in rotation from a list mutually agreed upon, whose assays shall be final if within the limits of the assays of the two parties; and if not, the assay of the party nearer to the umpire shall prevail. Losing party shall pay cost of umpire. In case of Seller's failure to make or submit assays, Buyer's assays shall govern.

2. All schedules on ore not under contract for a definite period of time are subject to change without notice.

3. The rates quoted herein are for carload lots. On any lot containing one ton or less, there will be a sampling and handling charge of $10.00. This charge will be decreased by $1.00 for each ton in excess of one ton.

4. The rates quoted apply only to ore in bulk. Fifty cents per ton additional will be charged for ore in sacks, to cover extra cost of handling.

5. In the event quotation date should fall on a legal Holiday or one upon which no quotation is issued, the next succeeding quotation will be used in settlement.

6. In this schedule where the word "ton" is used, it is understood to be a ton of two thousand pounds avoirdupois; where the word "ounce" is used, as referring to gold and silver, it is understood to mean the troy ounce; and where the word "unit" is used, it is understood to mean one per cent of a ton, or twenty pounds avoirdupois.

7. In order that delivery of the ore at our plant may not be unnecessarily delayed, we make it a general rule that THE FREIGHT CHARGES MUST BE PREPAID OR GUARANTEED BY THE SHIPPER.

8. The rates quoted herein are based on present existing scale for common labor at El Paso Smelting Works, and present published all rail freight rates on lead and copper bullion from El Paso, Texas, to New York City. Any increase or decrease is for account of Seller, and proper deduction or credit shall be made accordingly.

AMERICAN SMELTING AND REFINING COMPANY
El Paso Smelting Works
El Paso, Texas.

(over)

General Clauses Governing All Open Schedules

1. Weighing, moisture and ore sampling (at which seller or a representative may be present) as done by Buyer according to standard practice, promptly after receipt of product, will be accepted as final. The absence of seller or a representative shall be deemed a waiver of the right in each instance. After sampling, the product may be placed in process, commingled, or otherwise disposed of by Buyer. In case of disagreement on assays, an umpire shall be selected in rotation from a list mutually agreed upon, whose assays shall be final if within the limits of the assays of the two parties; and if not, the assay of the party nearer to the umpire shall prevail. Losing party shall pay cost of umpire. In case of Seller's failure to make or submit assays, Buyer's assays shall govern.

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7. In order that delivery of the ore at our plant may not be unnecessarily delayed, we make it a general rule that THE FREIGHT CHARGES MUST BE PREPAID OR GUARANTEED BY THE SHIPPER.

8. The rates quoted herein are based on present existing scale for common labor at the Hayden Plant, and present published all rail freight rates on lead and copper bullion from Hayden, Arizona, to New York City. Any increase or decrease is for account of Seller, and proper deduction or credit shall be made accordingly.

AMERICAN SMELTING AND REFINING COMPANY

Hayden, Arizona.

(over)

1M 1-40 CAIRNS

American Smelting and Refining Company

HAYDEN, ARIZONA

SCHEDULE F

Date Effective February 24, 1942

Mine OLD GLORY CLAIMS Location Tiger, Old Hat District, Pinal Co., Arizona

Shipper MAMMOTH-TIGER EXT. MINING CO. Address R.M. Baird, President, 3763 6th Ave., Los Angeles, Calif.

Character Ore SILICEOUS R. R. Station Truck to Smelter

The following terms are subject to the General Clauses shown on the back of this sheet, and are subject to prompt acceptance. Unless shipments are begun within 30 days this quotation is automatically cancelled.

PAYMENTS

GOLD: If 3/100 of an ounce per dry ton or over pay for all at the rate of $ 19.50 per Troy ounce, plus 90% of the realized gold premium in excess of $20.67 per Troy ounce. Under present Government net realized price ($34.9125), this is equivalent to $ 32.31825 per Troy ounce.

SILVER: Pay for 95% (minimum deduction of ½ ounce) at the average Handy & Harman New York Silver quotations for the calendar week, including date of arrival of last car of each lot at plant of Buyer, or, if higher, at the realized Mint price provided silver qualifies for Government purchase and affidavit is furnished, less a deduction in either case of 1½c per ounce. Present Mint price is 70 5/8c per ounce.

COPPER: Deduct from the wet copper assay eight pounds and pay for ninety-five per cent of the remaining copper at the daily net refinery quotations for electrolytic cathodes as published in the Engineering and Mining Journal of New York averaged for the calendar week including date of arrival of last car of each lot at the plant of the Buyer less a deduction of 2.5725 cents per pound of copper accounted for. Nothing paid for copper if less than one-half per cent by wet assay.

No payment will be made for any metal or content except as above specified.

DEDUCTIONS

BASE CHARGE: $ 3.50 per net dry ton of 2,000 pounds; provided the sum of payments for gold, silver, lead and copper does not exceed $ 15.00 per ton. Add to the base charge ten per cent of the excess over $ 15.00 to a maximum charge of $ 5.00 per dry ton.

Add 50¢ per ton for handling truckload shipments.

The base charge just specified is for ores containing at least eight pounds of copper per ton; when a smaller quantity is contained, there will be added to the base charge a sum equivalent to the value of the deficiency between actual contents and eight pounds per ton computed according to the terms specified herein for copper payment.

INSOLUBLE: Allow all units free; charge for the excess at cents per unit, fractions in proportion.

ZINC: Allow five units free; charge for the excess at thirty cents per unit, fractions in proportion.

ALUMINA: 10% of the silica content will be allowed free. Alumina in excess of this amount will be charged for at 25¢ per unit, fractions in proportion.

ARSENIC: Allow two units free; charge for the excess at $0.50 per unit, fractions in proportion.

ANTIMONY: Allow one unit free; charge for the excess at $1.50 per unit, fractions in proportion.

BISMUTH: One-tenth of one per cent will be allowed free. The excess will be charged at fity cents ($0.50) per pound, fractions in proportion.

MOISTURE: A minimum deduction of one per cent will be made from wet weight; when over one per cent contained the actual moisture will be deducted.

DELIVERY: F. O. B. unloading bins American Smelting and Refining Company, Hayden, Arizona.

TAXES: Deduct Federal or State taxes, import duties, stamps and/or other charges now or hereafter imposed.

FREIGHT: All railroad freight and delivery charges for account of seller. Deduct from settlement freight and other advances made by Buyer.

TONNAGE: Limited to 250 tons per month except by special arrangement.

AMERICAN SMELTING AND REFINING COMPANY

By Brent N. Rickard
BRENT N. RICKARD

(over)

ESTA L. BAYLESS
RECORDER

EDWYNA B. DEVINE
CHIEF DEPUTY

COUNTY RECORDER

PINAL COUNTY
STATE OF ARIZONA
FLORENCE

February 24, 1942

TO WHOM IT MAY CONCERN:

I have searched the records of my office and find the following:

Old Glory, and Old Glory #2, dated 7/1/31, located by Miller Wallis were recorded 7/27/31 in Book 46 of Mines Pages 611 and 612.

Old Glory #3, located 2/1/39 by Miller Wallis, was recorded in Book 50 of Mines Page 495.

Old Glory #4, and Old Glory #5 located 2/1/39 by Miller Wallis were recorded in Book 50 of Mines Page 529.

All above Locations in the Old Hat Mining District.

On July 7, 1941, said mining claims were deed over to J. E. Dietrich. Said deed recorded July 15, 1941 in Book 6 of Mining Deeds, Page 473.

On August 1941, said Mining Claims were assigned, transferred and set over to Mammoth-Tiger Extension Mining Co, in whose name they now stand. Recorded 9/8/41 Book 23 of Miscellaneous records Page 20.

Yours truly,

Esta L. Bayless
Pinal County Recorder

By Ann Maki
Deputy

Mammoth-Tiger Extension Mining Co.
Tiger, Arizona

LABORATORY TESTING
ULTRA-VIOLET DETERMINATIONS
ASSAYING RESEARCH
ELECTROLYTIC SEPERATION
SPECTOGRAPHIC ANALYSIS

MINING
MINERALOGY SURVEY
MILL CONSTRUCTION & TESTING
FLOW SHEET FOR ALL MINERALS

Roy N. Baird

3763 6TH AVE., LOS ANGELES, CALIF.

TELEPHONE AXMINSTER 5993

Feb. 21, 1942

Reconstruction Finance Corporation,
811 Vermont Avenue NW.,
Washington, D.C.

Dear Sirs:

We estimate our present valuation at $500,000.00 on the property of the Mammoth-Tiger Extension Mining Co. on the known evidence of the existence of a large ore deposit in the vicinity of our shaft on claims No. 1 and 2.

Our own diggings show the presence of an ore deposit as indicated in our report and on our maps, which are included in our application.

On the extreme east of claim No. 4, which joins the Mammoth St. Anthony properties, a large ore deposit was opened up on the 600 ft. and 700 ft. levels. They stopped mining in this district when they discovered they were over on our property. These ore faces can be inspected from the Mammoth St. Anthony workings.

It is interesting to note that the ore in this vicinity runs above average in values as compared to the surrounding workings in the Mammoth Mining District.

Sincerely yours,

Roy N. Baird

President and Gen. Manager
Mammoth-Tiger Extension Mining Co.

LABORATORY TESTING
ULTRA-VIOLET DETERMINATIONS
ASSAYING RESEARCH
ELECTROLYTIC SEPERATION
SPECTOGRAPHIC ANALYSIS

MINING
MINERALOGY SURVEY
MILL CONSTRUCTION & TESTING
FLOW SHEET FOR ALL MINERALS

Roy N. Baird
3763 6TH AVE., LOS ANGELES, CALIF.
TELEPHONE AXMINSTER 5993

A large number of assays were run on this property at the time of purchase. However, th the Certificates are mot in our posession.

Lead assays ran from 5.7% to 31.3%
Copper " " " 5.8% " 10.6%
Gold increases in the deeper levels running from .01 to .54%

Zinc, molybdenum, vanadium, and silver show in profitable quantities in some of the assays. We will be unable to reclaim these minerals prior to the installation of a mill.

A. L. PELLEGRIN & SON
FORMERLY FOR 6 YEARS U. S. ASSAYERS
ASSAYERS AND CHEMISTS

TESTING FOR THE RARE METALS AND MINERALS, CYANIDE AND OTHER METALLURGICAL LABORATORY TESTS

339 SO. STONE AVE.
TUCSON, ARIZONA

ASSAY AND ANALYSIS CERTIFICATE

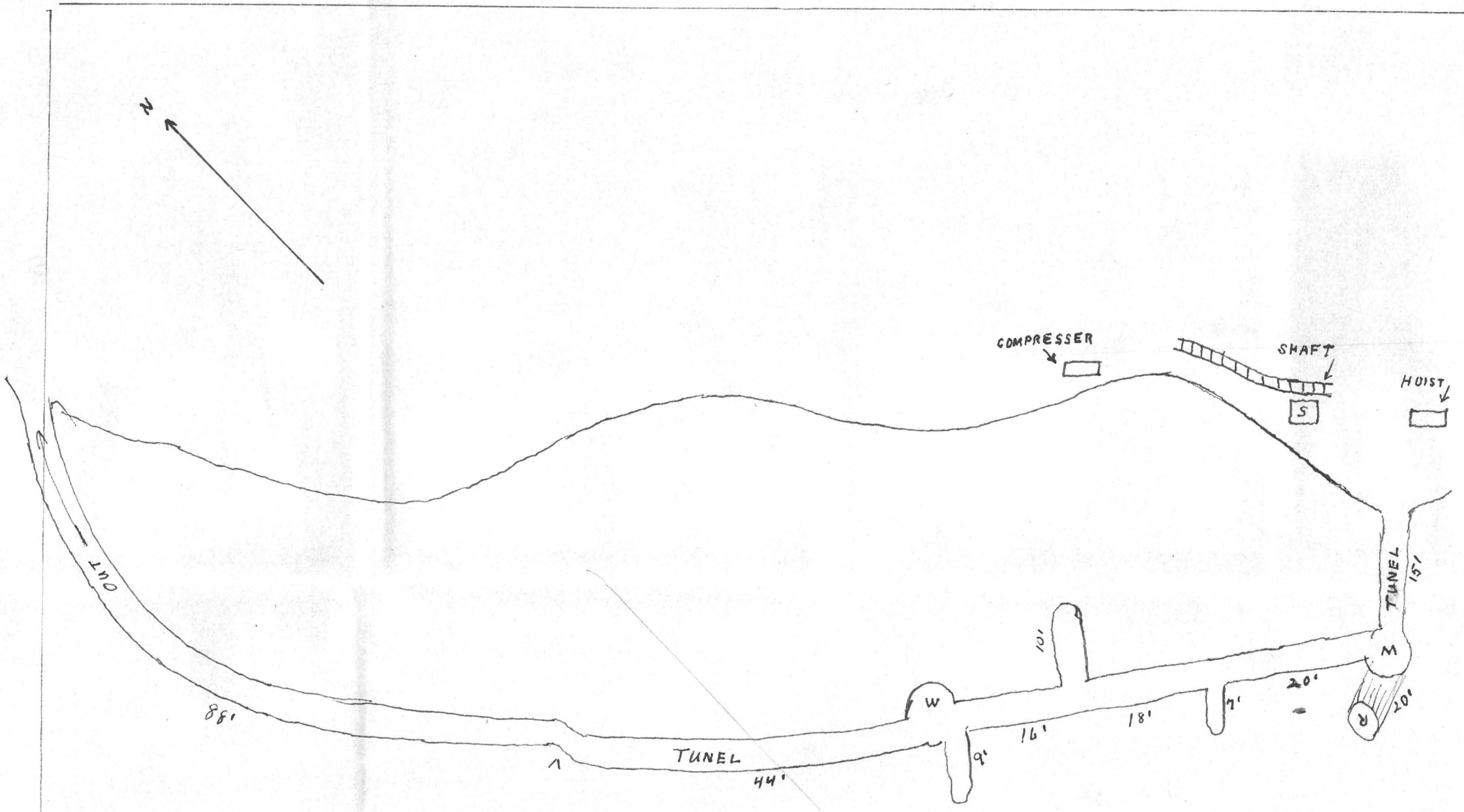
MR. Mammoth Tiger Ext.

Mar. 2nd 1942

NO. OR MARKS	FIRE ASSAY—PER TON				CHEMICAL ANALYSIS — PER CENT						
	Gold oz.	Val. at $	Silver oz.	Val. at	Copper %	@ 17	Lead %	@ 9 1/4		@	Total Value
A.		$		$	0.49	$1.67					$
B		$		$	3.63	12.34					$
C		$		$	2.67	9.08	3.33	$6.16			$
D		$		$			34.10	63.08			$
E		$		$	2.10	7.14					$
		$		$							$
		$		$							$
		$		$							$
		$		$							$
		$		$							$

CHARGES $6.00 pd

A. L. Pellegrin & son. ASSAYERS

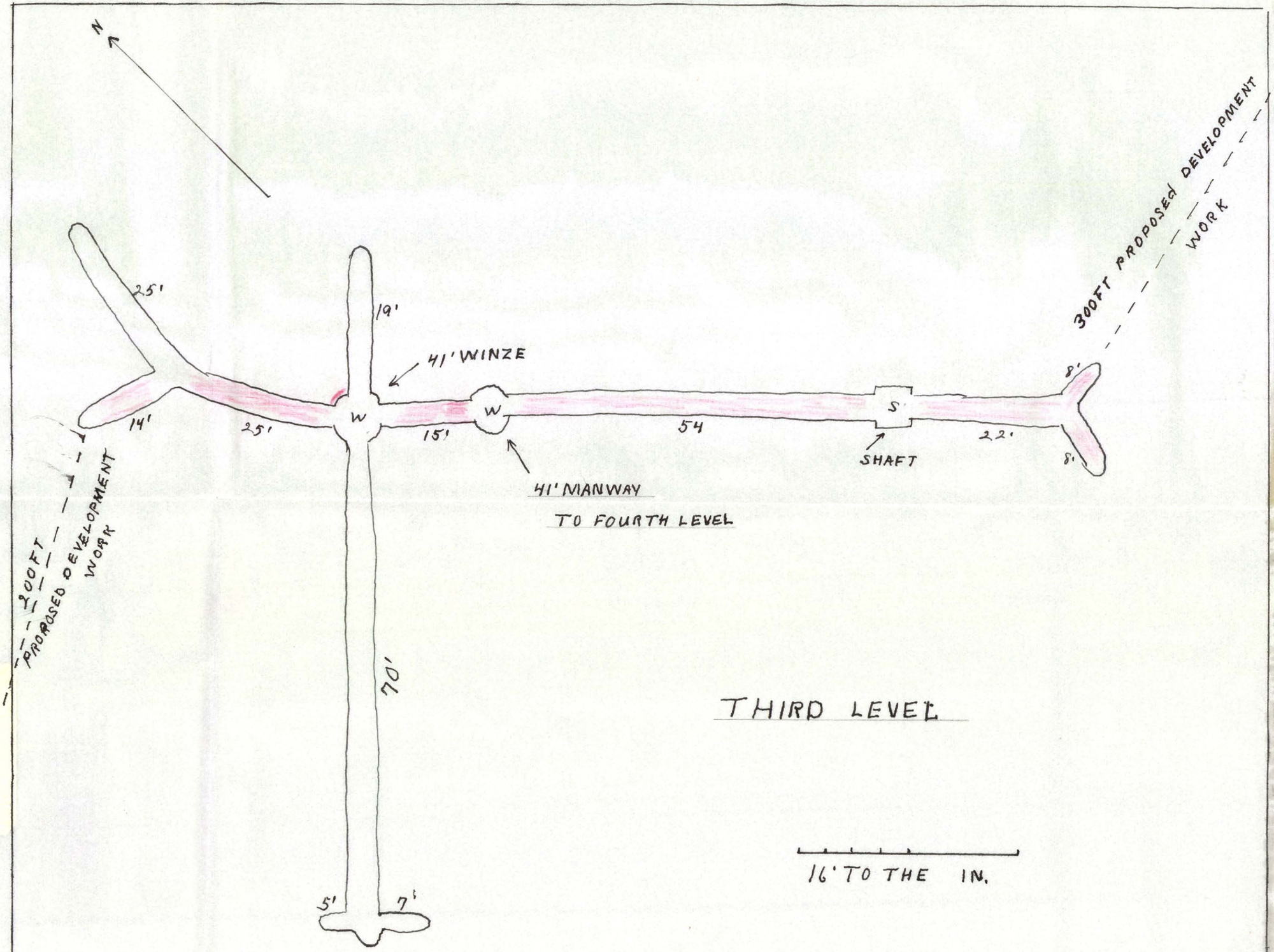


16' TOTHE IN.

MAMMOTH-TIGAR EXTENSION MINING CO

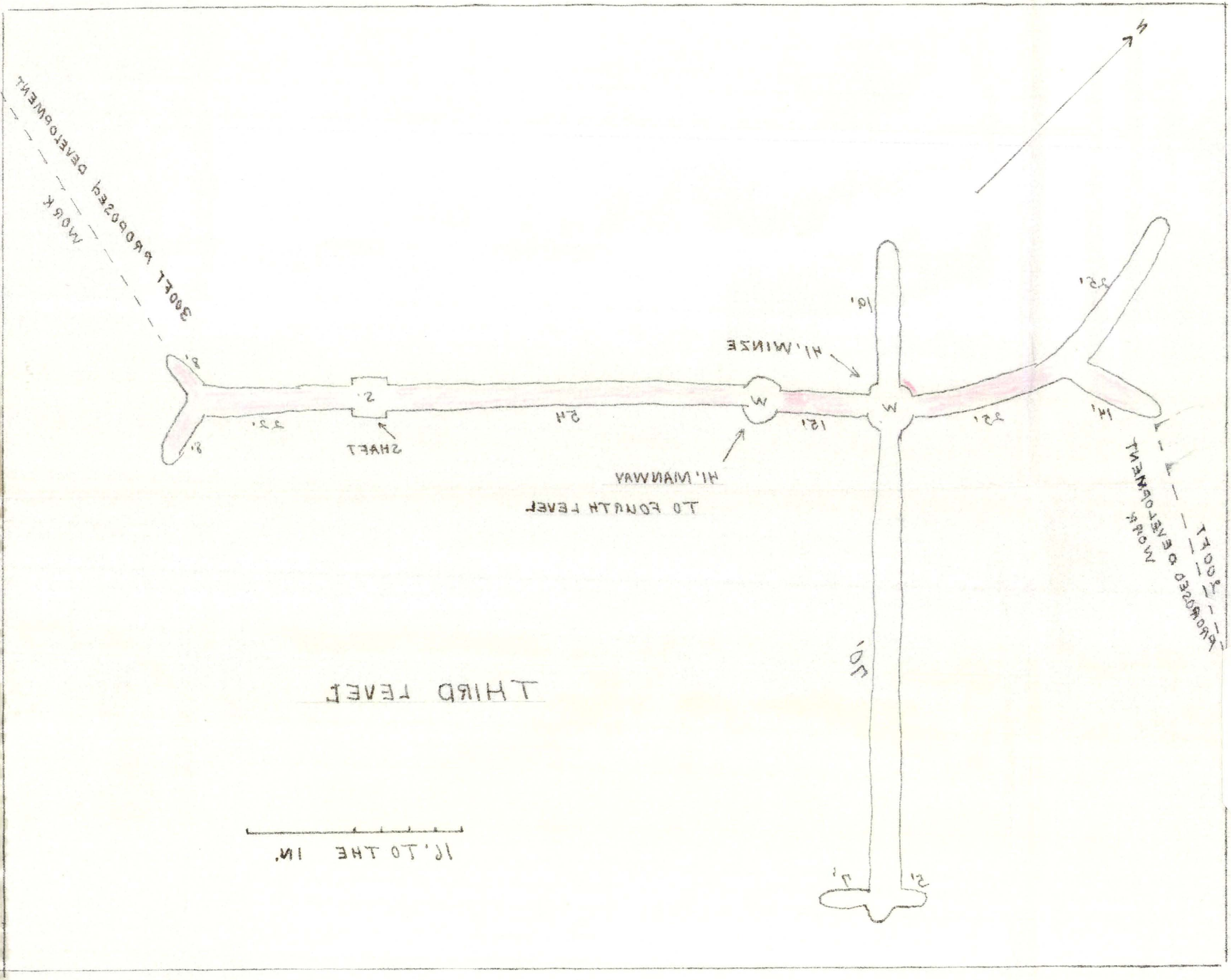
TUNEL LEVEL AND SHAFT.

Tunnel Levels



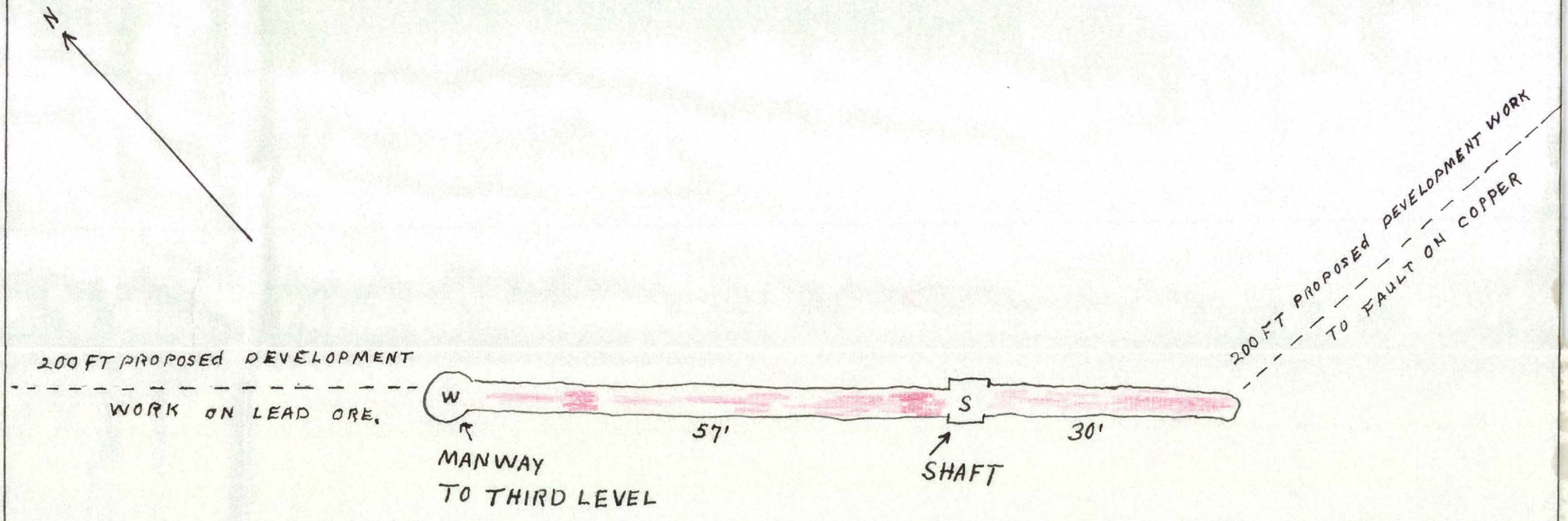
THIRD LEVEL

16' TO THE IN.



300FT PROPOSED DEVELOPMENT WORK
SHAFT
MANWAY TO FOURTH LEVEL
WINZE
300FT PROPOSED DEVELOPMENT WORK
THIRD LEVEL

Third Level

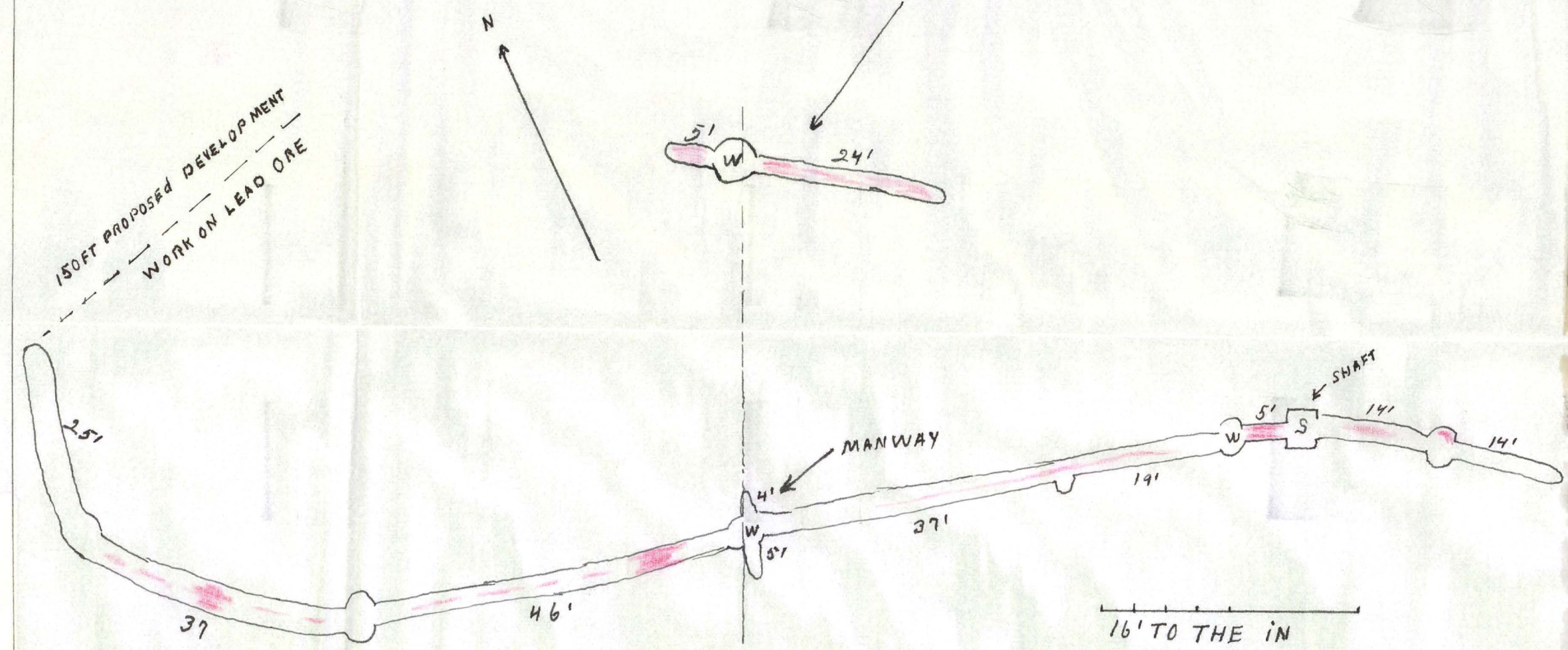


FOURTH LEVEL

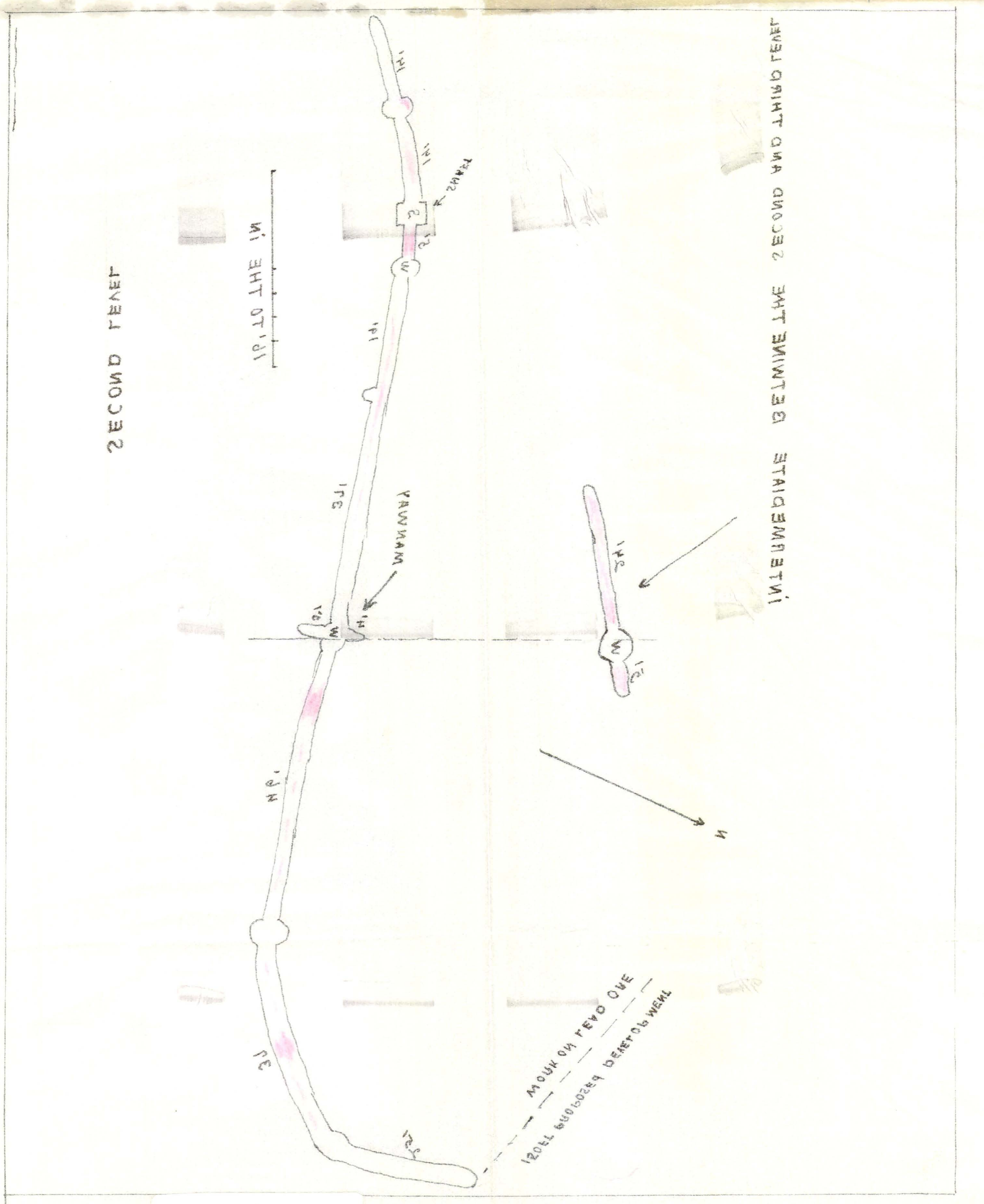
16' TO THE IN.

Fourth Level

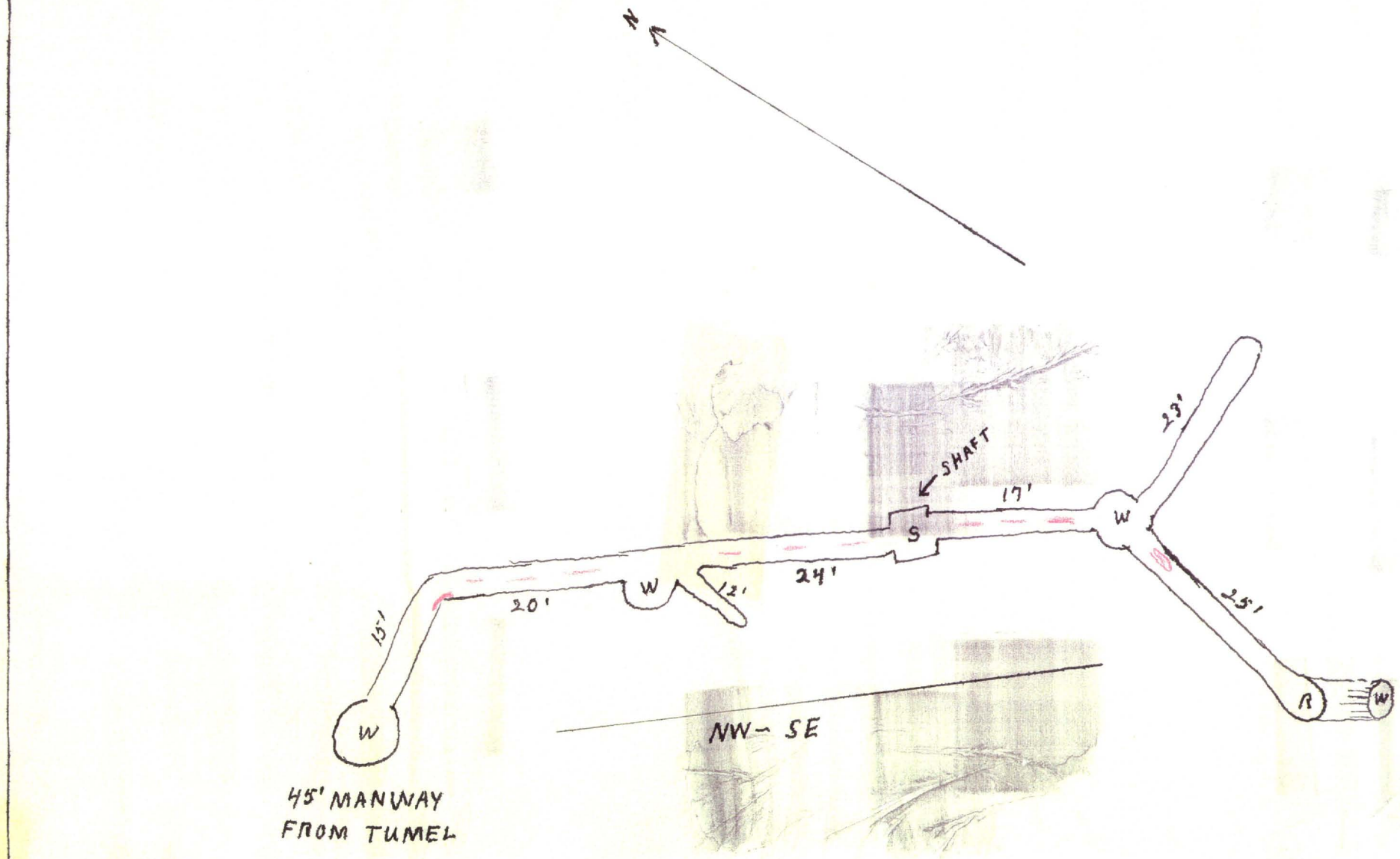
INTERMEDIATE BETWINE THE SECOND AND THIRD LEVEL



SECOND LEVEL

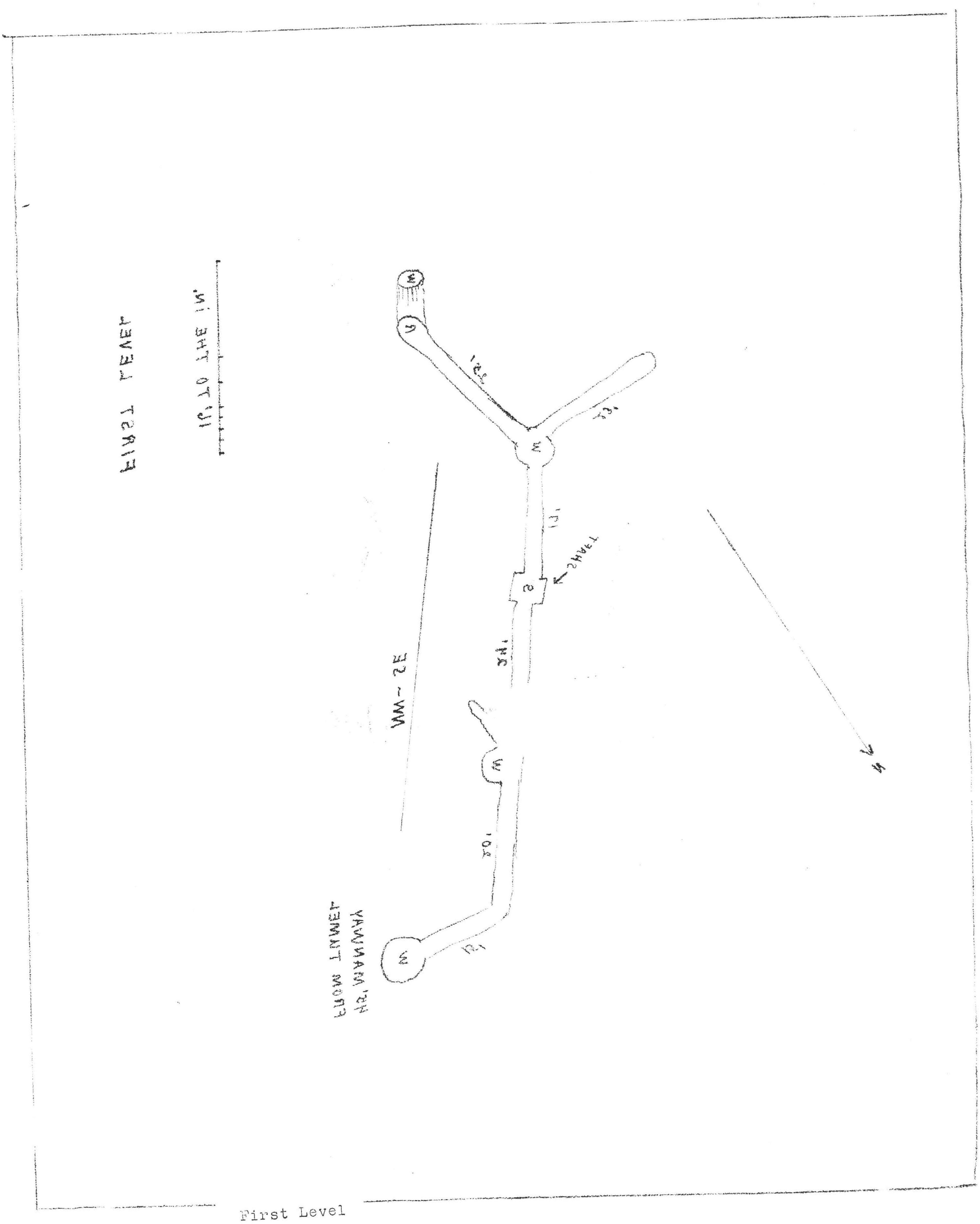


Second and
Intermediate Level



16' TO THE IN.

FIRST LEVEL



First Level

3973 Patented
REMNANT EXTENSION

3974
MANANA
Patented

3974
QUIEN SABE
Patented

807
LOT No. 43A

804

G5/85
Patented

G5-89
Patented
REMNANT
RAVEN

806
G5-88
Patented

MARS

MAMMOTH
EXTENSION
Patented
3972

3974
FORD
Patented

3974
2999 A13
FORD FRACTION
ROOSTER MINE
Patented

4203 - JUNE BUG

698
LOT No. 37 G5-45
HACKNEY
Patented

802
G5-83
Patented

3912 ANON TRIANGLE A
Patented

4203 - COYOTE

699
LOT No. 38 - G5-46
Patented

RAVEN

MAMMOTH

4203 - TIP TOP

3971
Patented
ERFLETCH

3751

1157 - G6-128 MOHAWK WEDGE
Patented

4203 - NEW YEAR

4203 - JAVALIN

4203 - GULCH

1157
G6-128
Patented
MOHAWK

3751
WASHINGTON
Patented

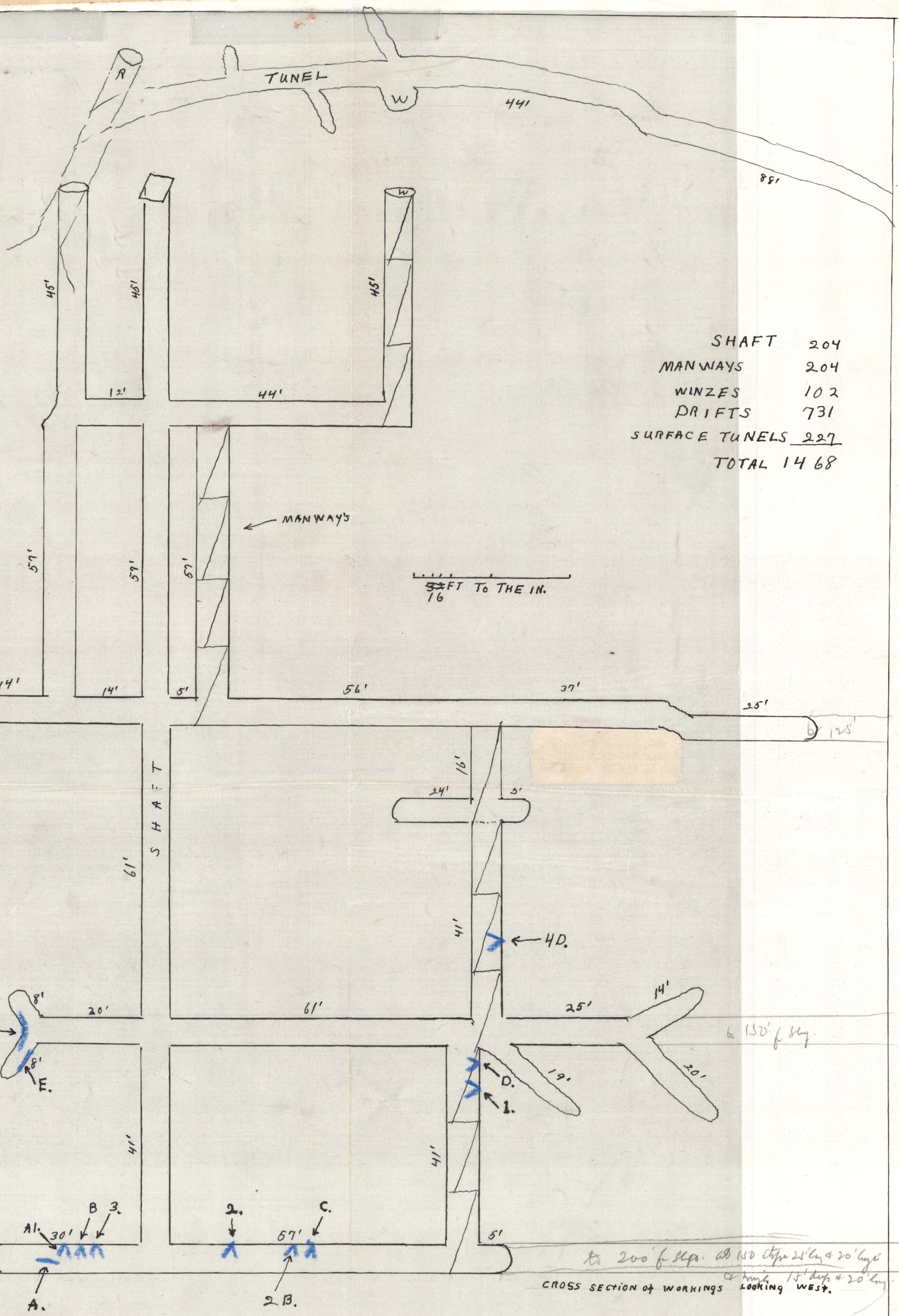
GOLDEN SLIPPER
Patented

MA
OL
SEC. 2

Part of Mammoth & Anthony C

Patented Claims

Survey Map



CROSS SECTION of WORKINGS LOOKING WEST.

SHAFT	204
MANWAYS	204
WINZES	102
DRIFTS	731
SURFACE TUNELS	227
TOTAL	1468

~~5~~ 16 FT TO THE IN.

Shafts from the hor. n.g.

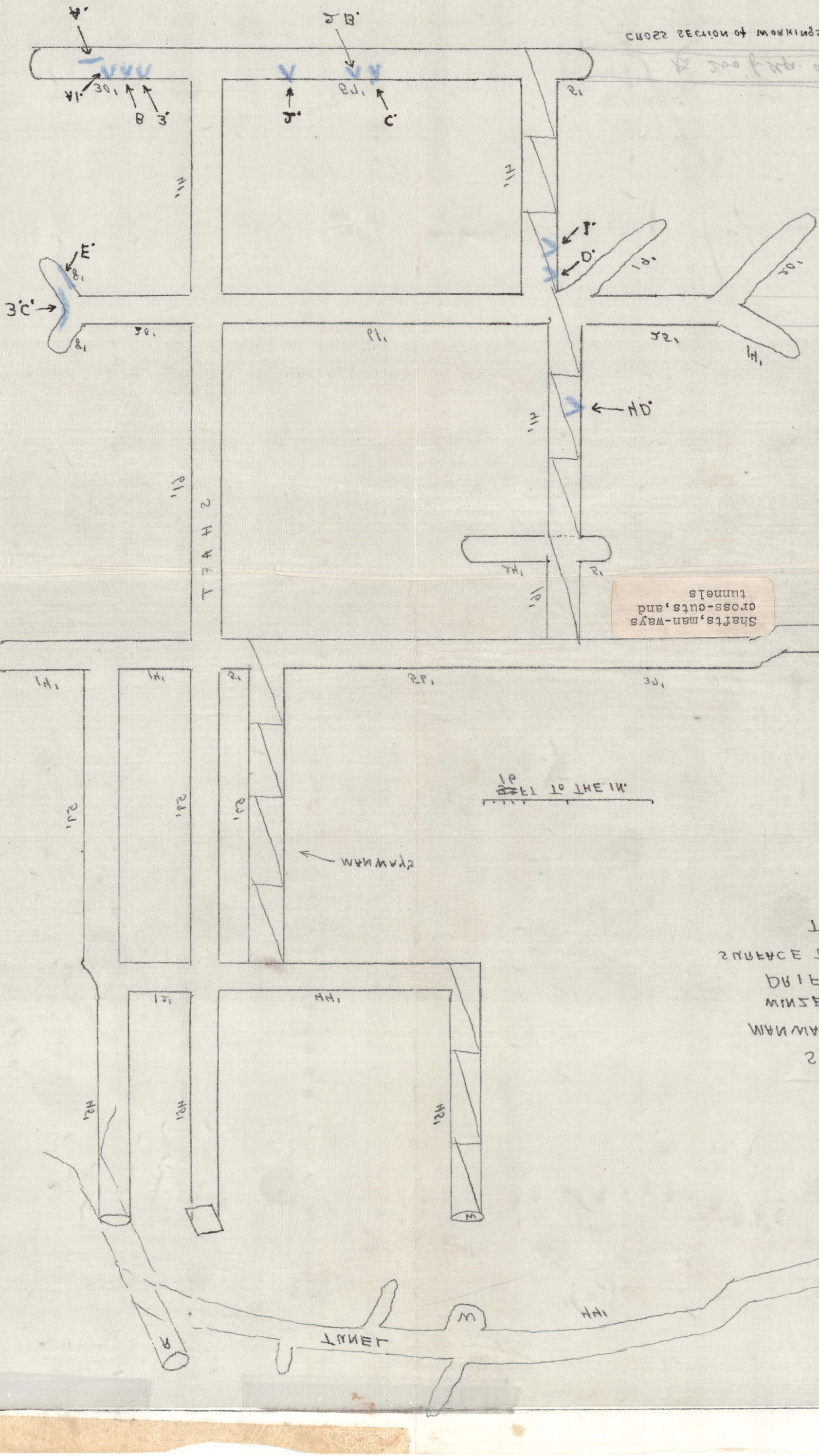
MAMMOTH-TIGER EXTENSION MINING CO.

TIGER ARIZONA

MAMMOTH-TIGER EXTENSION MINING CO.

TIGER ARIZONA

CROSS SECTION of workings looking west.



Mammoth-St. Anthony's Complex Operations

Lead and Zinc Ores in the United States