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ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: MAMMOTH COPPER GROUP

ALTERNATE NAMES:

BISBEE EXPLORATION MINING CO

COCHISE COUNTY MILS NUMBER: 736

LOCATION: TOWNSHIP 23 S RANGE 23 E SECTION 22 QUARTER --

LATITUDE: N 31DEG 25MIN 00SEC LONGITUDE: W 109DEG 59MIN 24SEC

TOPO MAP NAME: BISBEE - 7.5 MIN

CURRENT STATUS: UNKNOWN

COMMODITY:

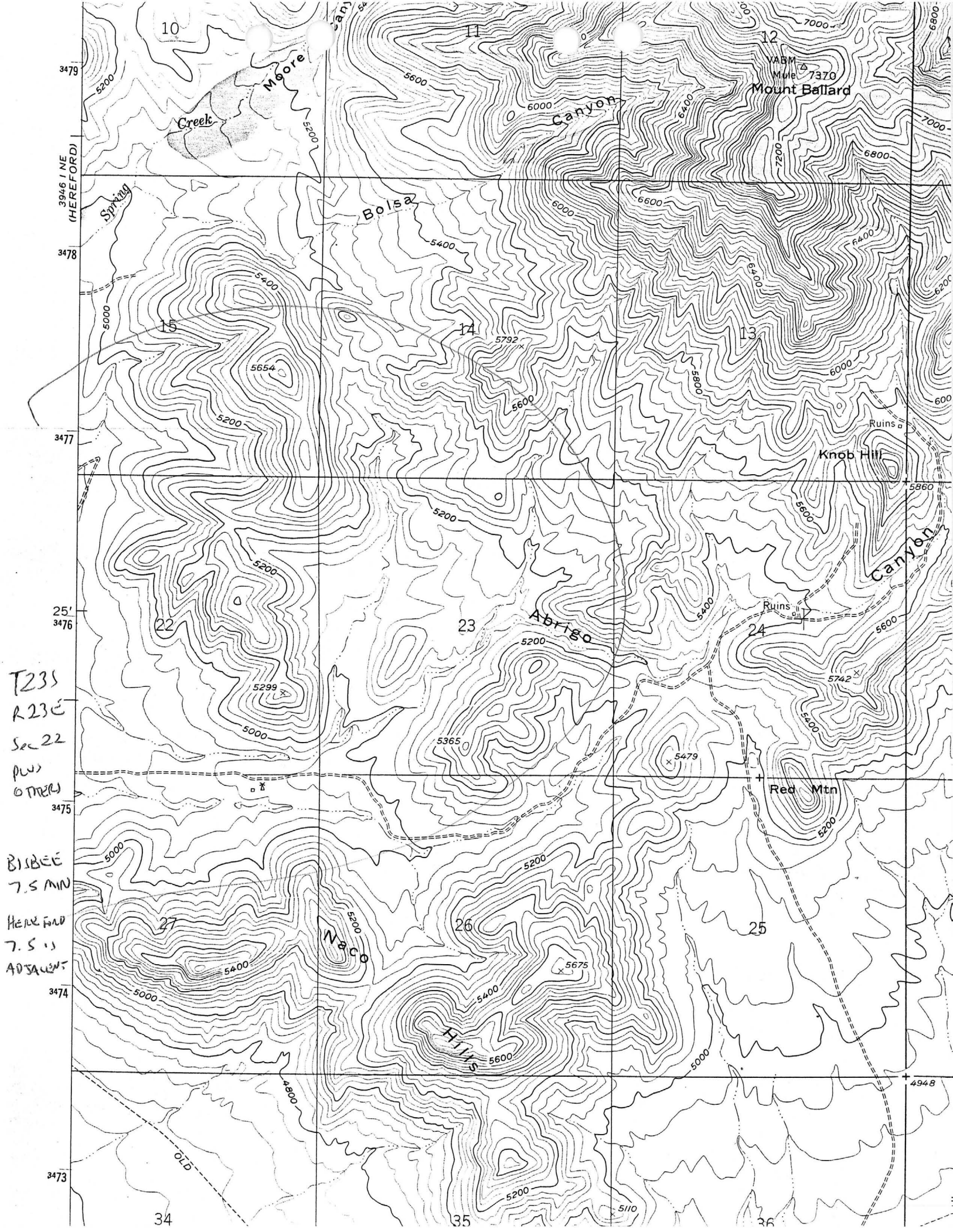
LEAD

MANGANESE

BIBLIOGRAPHY:

ADMMR MAMMOTH COPPER GROUP FILE

CLAIMS ALSO IN SEC 23, 24, 25, 26 & 27



T23S  
R23E  
Sec 22  
PLW  
OTHER

BISBEE  
7.5 MIN  
HERE AND  
7.5 IS  
ADJACENT

BISBEE EXPLORATION MINING COMPANY

Bisbee, Arizona.

June 8, 1937

The report herewith submitted by Mr. L. T. McElvenny is that of the defunct Bisbee Expansion Mining Company which was organized in June of 1928 and went to the wall in 1929 at the beginning of the depression before they got under way.

Mr. McElvenny's report covers the same ground that the proposed Bisbee Exploration Mining Company is to control, with the exception of four additional groups of claims bringing the total number of claims up to 140 instead of 70, as was in the former company.

Yours very truly,

J. C. Kirsch,

Acting Sec. of the Proposed Bisbee  
Exploration Mining Co.

JCK:R.

REPORT ON BISBEE EXPANSION MINING COMPANY  
by  
L. T. McElvenny

The Bisbee Expansion Mining Company's property is situated in the Warren Mining District, Cochise County, Arizona, at four miles southwest of the City of Bisbee in an air line and seven miles by road. The border town of Naco on the Southern Pacific Railroad lies four miles south. The town of Don Luis, which is the shipping yard for the Bisbee District, where the ore trains are made up, and where there are loading platforms, is two and one-half miles east of the claims.

The company owns 42 full size mining claims acquired by purchase and an undivided one-half interest in 6 more, and holds under lease and bond with the right to purchase within three years, 17 full size claims and 1-2 of six more. The area covered by these claims is: - owned outright 900 acres; held under lease and bond 400 acres - a total of 1300 acres.

The claims purchased are as follows:-

Chalcocite No. 1 -----	1
Cuprite Group - Nos. 1 to 10 -----	10
Azurite Group - Nos. 1 to 10 -----	10
Boronite Group - Nos. 1 to 10 -----	10
Malachite Group - Nos. 1 to 4 -----	4
Galena Annex, Lyona and Rainbow -----	3
Undivided one-half interest in Mammoth Copper Nos.	
1, 2, 7, 8, 9, 10 ----- Equivalent of -----	3
Western King Nos. 1 and 2 -----	2
Western King Extension Nos. 1 and 2 -----	2
Total -----	45

The claims held under lease and bond are as follows:

Undivided one-half interest in Mammoth Copper Nos.	
1, 2, 7, 8, 9, 10 - - - - - equivalent of - - - - -	3
Mammoth Coppers Nos. 3, 4, 5, 6, 11, 14, Annex- - - - -	8
Western King Nos. 3, 4, 5, 6 - - - - -	4

Western King Extension Nos. 3, 4, 5, 6 - - - - -	4
Galena Claim Survey No. 3616 - - - - -	<u>1</u>
Total - -	-20

All of these claims have been surveyed and the corners well marked with wood posts which have numbered copper tags on the side.

The Galena Claim has been surveyed for patent and has the required \$500 worth of improvements upon it and in addition has a 65 foot shaft.

The older locations comprising the Galena Annex and Rainbow claims, Western King Group, Western King Extension Group and the Mammoth Copper Group have had considerable work done on them. On the Western King No. 2 there is a tunnel 63 feet long with a winze 47 feet deep. On the Mammoth Copper No. 5 there is a tunnel 100 feet long with a 30 foot winze. There are also several shafts over 50 feet deep on this portion of the property.

On the balance of the claims, the location work has been done, the claims monumented and the location notices recorded, so that all the mining laws and regulations have been complied with.

These claims lie contiguous to one another and form a compact group extending about 12,000 feet long and 6,000 feet wide.

Of the total number of claims in the property, 49 lie upon the Naco Hills, south of the Abridge Canyon overlooking the Espinal Plain and the San Pedro Valley; 16 lie to the north of the Abrigo Canyon on low lying reaches which climb steadily to the north to form the high backbone of the Mule Mountains.

The highest point on the Naco Hills rises 1000 feet above the surrounding Espinal Plain to a maximum elevation above sea level of 5800 feet. Mount Ballard at one and one-half miles north of the claims attain an elevation of 7359 feet above sea level, being the highest point of the Mule Mountains.

The main highway from Bisbee to the San Pedro Valley and the Huachuca Mountains runs along the southern end of the Naco Hills. From this highway two fair roads have been constructed with easy gradients, one going to the southern end of the Cuprite No. 4 and the other going up along the eastern side line of the property to the shaft on the Galena Claim. Roads can be built to any part of the property at very small cost and with very slight grades.

#### A BRIEF DESCRIPTION OF THE BISBEE COPPER CAMP.

The Bisbee main ore zone occupies an area about two miles long in an east-west direction by one mile wide in a north-south direction. The ore bodies on the Night Haw, Boras and White Tailed Deer Claims extend the north-south width to a mile and a half at one point. The new ore discovery on the Contact Claim leased by the Contact Leasing Company from the Phelps Dodge Corporation is just two miles south of the Southwest and Higgins ore bodies.

The northern boundary of the ore zone is the Dividend Fault, the western boundary is the Escacado Zone of faults of which the Quarry Fault is one. No eastern nor southern boundaries have as yet been found. The Bisbee Queen Mining Company is now prospecting their property which lies about 4 miles to the southwest of Bisbee.

The fundamental reason for the presence of the ore near the surface of the earth in this area, and therefore, the existence of mineable deposits, is due to the formation of the Dividend Fault.

This profound break, which, measured in surficial manifestations, caused a subsidence of some 3000 feet on one side below the other, reached deep enough within the earth to tap igneous rocks and reservoirs of copper, lead, silver and gold.

All of these materials ascended the fault plane and, flowing out into the minor faults and breaks branching away from the main fault, formed deposits in the limestones which were encountered near the surface.



The igneous magmas formed sills and dikes of porphyritic rock, the metals formed ore deposits. The two are closely related in position.

Of the different formations of limestone, the lowest, the Abrigo, received some ore deposition in its upper beds; the top formation, the Naco, received a little. The principal ore deposits were formed in the Martin and Escabrosa Limestones which are the formations lying between the Abrigo and the Naco. Hence these horizons are looked upon in the Bisbee District as being the most favorable for ore deposition. The accompanying map - map No. 2 - shows the geological column of the Warren or Bisbee Mining District. On this map the Pinal Schist is the oldest formation and the youngest shown on the map is the Morita.

To the south of the Abrigo Fault are also many faults cutting the Naco Limestone, these faults being exposed in tunnels, open cuts and shafts. They strike both parallel to the Abrigo Fault and at right angles to it, but are not traceable on the surface because of the uniform texture and appearance of the limestone.

These faults, cross-faults and breaks are very desirable in a limestone area due to their tending to localize and concentrate the ore bearing solutions.

#### ORES AND OUTCROPS.

1) There is but one actual ore outcrop on the property. This is one of the Galena claims at the northeast corner of the group. At this point lead minerals are deposited in a fracture running parallel to the Abrigo fault but dipping to the north, the ore being associated with a porphyry dike and considerable silica. The country rock is Abrigo Limestone. Some good assays were taken near the surface. A shaft has been sunk on the vein to an inclined distance of 65 feet, but no drifting has been done. The find is of significant interest as showing the presence of ore in this region.

2) The crushed zone of the Abrigo Fault is quite wide as would be natural in a fault of such magnitude. The faulting must have occurred along several parallel slips which are now



occupied by the Abrigo Canyon and would seem to be about one hundred feet wide over all. Individual fault planes, as cut by tunnels driven across them, show widths of fifteen to twenty feet. The leached gouge contains much iron oxide and some manganese oxide. Any copper minerals which might have been deposited at the present elevation of the outcrop have long since been leached out and are now concentrated at a lower depth in the vein. Samples taken in various places in this leached fault matter assay <sup>8/</sup> from 20 cents in gold and 40 cents in silver to \$2.80 in gold and 50 cents in silver per ton.

3) On the Mammoth Copper No. 4 claim is an outcrop of iron and manganese oxides 50 feet wide exposed for a length of 60 feet. The strike is N. 80 degrees W, the dip is to the south, both strike and dip being parallel to the Abrigo Fault from which the showing is distant 1100 feet to the south. The country rock is Naco Limestone. The outcrop assays 11.6% iron, 7.5% manganese, a trace of gold and one-half ounce silver to the ton. A shaft about 50 feet deep has been sunk on the hanging wall of the vein. This showing is similar to the outcrops of the Bisbee area which point to the presence of large ore bodies below.

4) Over all the Naco Limestone on these claims are scattered small outcrops of iron stained silica and iron oxides which carry small amounts of gold and silver. These are valuable as showing a large, well mineralized area and one well worth prospecting.

On the southern end of the Naco Hills several large iron-silica breaks, one large manganese outcrop and some copper carbonates are found in the lower bends of the Naco Limestone. This seems to bear out the argument that ore will be found deep within or below the Naco formation.

On the Nob Hill Claim about 2000 feet east of the Galena Shaft a large body of pyrite carrying one half per cent of copper has been found in a tunnel in the Escabrosa Limestone. No work has been done on this showing to see whether the copper values have increased in depth.

About one and one-half miles to the east of this group, the Contact Leasing Company has found a body of siliceous copper ore on the contact between Escobrosa Limestone and Bolsa Quartzite. This contact is along the Bisbee West Fault, which is parallel to the Abrigo Fault.

Between the Bisbee West Fault and the Abrigo Fault, about 2500 feet east of this property, the Arizona Bisbee Copper Company commonly called the A. B. C. Co. has sunk a 600 foot shaft and has done about 1500 feet of development work on the 200, 300, 400, 500 and 600 foot levels. This mine has been shut down for some time but is now to be re-opened. New development work is to be done by a strong company. This work is to be based on the relation between siliceous outcrops and ore bodies as shown by the newer developments in all the ore zones of the Bisbee District.

#### MAPS.

Map No. 1 is a part of the Geological sheet of the Bisbee Quadrangle made by the United States Geological Survey to accompany the report of Dr. Ransome on the Bisbee District. This map shows the outline of the Bisbee Expansion Mining Company's group, the Abrigo Fault, the Naco Hills, the position of Bisbee, Naco and Don Luis, together with the various geological formations encountered on this property.

One of the peculiarities of the ore deposits of the Bisbee District is the comparative absence of ore outcrops on the surface. Perhaps in all there were no more than a half dozen small stringers upon which prospecting work was done, and none of these led directly to ore bodies below.

The main surface evidences of ore bodies are outcrops of iron and manganese oxides and silica, and the tops of ore bodies so indicated have been found beneath these outcrops at depths of from 400 to 1600 feet.

#### SURFACE GEOLOGY OF THE BISBEE EXPANSION PROPERTY.

The Naco Hills are formed entirely of Naco Limestone with one intrusion of porphyry. Hence all that portion of the Bisbee

Expansion Group lying south of the Abrigo Canyon is covered with Naco Limestone, the beds striking about east-west and dipping flatly at 10 degrees to the north.

Abrigo Canyon, where it cuts across these claims, follows the Abrigo Fault, a great slip, second in magnitude to the Dividend Fault and similar to it in dip and amount of displacement.

The formations to the south of this fault have been dropped down 2000 or more feet with respect to the formations on the north side, so that upon the most northerly portion of these claims are exposed the older limestones: The Escabrosa, Martin and Abrigo, of which the Escabrosa seems to be placed here as the result of a thrust fault and thus not normal in its relation to the other beds of limestone.

The area south of the Abrigo Fault is covered with Naco Limestone, and by looking at the Geological Column- Map No. 2, one sees that underneath it would be found the Escabrosa, Martin and Abrigo Limestones. So that if a vertical shaft were sunk in this area one would expect to encounter: first, about 1000 feet of Naco Limestone; then, second, 700 feet of Escabrosa Limestone; third 340 feet of Martin Limestone; fourth, 770 feet of Abrigo Limestone; and, then, the top of the Bolsa Quartzite.

From the north side of the Abrigo Fault, erosion has removed all of the Naco Limestones, all of the original Escabrosa Limestone, most of the Martin Limestone and some of the Abrigo Limestone.

#### IGNEOUS ROCKS.

On the north side of the Abrigo Fault, there are many exposures of quartz porphyry, in large masses and strong dikes, cutting the Bolsa Quartzite and the Abrigo Limestone.

On the Abrigo Fault, itself, at about 1500 feet east of the eastern edge of the Bisbee Expansion Mining Company's property occurs a large hill of quartz porphyry known as the Red Mountain.

On the south side of the fault there is but one exposure of porphyry in the Naco Limestones, lying just south of the southern boundary of the Bisbee Expansion Group.

But, in this respect, it is well to note that, nowhere in the Bisbee District, does any great amount of porphyry outcrop in the Naco Limestone, that, besides the Sacramento Hill intrusion, there are but two small dikes finding their way to a Naco Limestone surface. out of all the great underlying masses of porphyry associated with the immense ore deposits.

So, it is reasonable to suppose that there are as many stock of porphyry cutting the lower formations to the south of the Abrigo Fault as there are cutting the same formations to the north of the fault, and that the porphyry will be found in abundance in the Martin, Escabrosa and Lower Naco Limestones, which underly all of the claims south of the fault.

#### FAULTS.

On the claims north of the Abrigo Fault are many small cross faults, the principal ones of which are to be seen on the accompanying geological map.

Map No. 2 shows a part of the geological column of the Bisbee District from the oldest rock, the schist, on down to the Morita formation. It also shows the thickness of the various formations and the symbols by which the various formations can be identified on the Geological Map. Map No. 1.

#### CONCLUSION AND RECOMMENDATIONS.

All of the things mentioned above, the great depth of the Abrigo Fault, the porphyry on the fault, the lead showing on the Galena Claim, the iron-maganese outcrop on the Mammoth Copper No. 4 Claim, and the general silicification of the Naco Limestone, lead me to believe that this property covers an area well worth exploration.

Some work should be done on the Galena Claim at the lead showing, but most of the prospecting should be done with diamond and churn drills in the Abrigo Fault zone and at the outcrop of the Mammoth Copper No. r Claim.

This work will, I believe, produce most gratifying results upon reaching the lower, ore-bearing horizons of the limestones.

Bisbee, Arizona.  
Feb. 18, 1929.

Signed by L. T. McElvenny  
Registered Engineer  
State of Arizona.