Docket

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
So. 157 Howard Street
Spokane 4, Washington
October 18, 1960

Memorandum

To: Chief, Division of Field Operations

From: Acting Field Officer, Region I

Subject: Examination report
Docket No. OME-6095 (Lead)
Robert Weston Dickie
Extension Claim
Madison County, Montana

INTRODUCTION

Robert Weston Dickie applied for OME assistance to explore for lead on the Extension claim, Madison County, Montana. He proposed to sink a shaft 4x8 feet in section to a depth of 150 feet and, from the bottom of the shaft, to drive 600 feet of drift and 100 to 150 feet of crosscut. Mr. Dickie estimates that his project will cost $16,525, of which the Government's share will be 50 percent or $8,262.50.

The property was examined August 24, 1960. The applicant could not be located in Butte and was not present during the examination. However, Eddy Redfern of Twin Bridges guided me to the property where we spent about 2 hours examining and mapping the accessible workings. As the results of the examination were not favorable, it was deemed advisable to make another examination when the applicant would be present. A second examination, lasting about 3 hours, was made October 5, 1960, in the company of the applicant.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Rocks in the area are pre-Beltian schists that have been intruded by granitic sills and dikes related to, but probably later than, the Boulder batholith. Three fissure systems cut the rocks; they trend respectively northwesterly, northeasterly, and easterly. On the Extension claim the Cooper vein, which the applicant proposes to explore, belongs to the northeasterly striking fissure system. Seven shafts ranging in depth from 10 feet to more than 44 feet and 11 shallow trenches now caved mark the trend of the vein which strikes

about N. 5° E. to N. 14° E for about 1,000 feet from the south end of the claim, then swings to a strike of N. 8° W. The highest assay of 7 samples taken by the examiner indicated 0.02 ounce gold and 1.1 ounce silver per ton and 1.0 percent lead. The only galena observed was in a 1- to 2-inch quartz stringer that branches off of the main vein near the south end of the claim, and a few specks in quartz in a trench on the south side of the Extension shaft. Drifts from the Cooper shaft, about 100 feet south of the Extension claim, are said to have developed an ore zone 150 feet long, 200 feet deep, and 2.5 feet wide. The only reported production from the Cooper shaft was in the 5 years between August 1, 1935, and September 18, 1940; during this period 5 shipments totaling 98 tons had an average grade of 0.29 ounce gold and 27.2 ounces silver per ton, 29 percent lead, 0.7 percent zinc, and 0.4 percent copper. From the irregularity of the shipments and their small size, it is probable that either the ore occurs in small lenses or that careful hand sorting was necessary.

Although a small amount of high-grade lead-silver ore might be found by deepening the Extension shaft about 100 feet and drifting to the south, it is doubtful that a truly significant discovery will be made.

It is therefore recommended that the application be denied.

LOCATION AND ACCESSIBILITY

The Extension claim is located in sec. 6, R. 3 S., T. 7 W., M.P.M., in the Nez Perce district, about 1½ miles south of the vanished town of Rochester. The property may be reached by following paved State Highway 41 for about 1 mile south from the town of Twin Bridges. Thence follow the gravel surfaced Melrose road, which turns left from Highway 41 just past the Orphans' Home, for about 2 miles at which point the road forks. Follow the left fork for about 4 miles westerly. From here, follow a gravel surfaced road to the right for about 2½ miles. Thence turn right and follow an unsurfaced road, little more than wheel tracks, for about 1-3/4 miles to the property. The property is accessible throughout the year although spring thaws and heavy rains might make the roads temporarily impassible.

PROPERTY

The property to be explored comprises one unpatented claim, the Extension claim, which the applicant owns by right of location. Notice of location is filed at the Madison County Courthouse, Virginia City, Montana, in book 32, page 84.

There are 7 shafts and 14 trenches and pits on the property (fig. 1). Except for 3 trenches and 2 shafts, all the workings are either caved or filled with debris or inaccessible. The three clean trenches, in the northwest part of the claim, are on an irregular easterly striking structure that contained small pockets or gold-bearing quartz and are not germane to the subject of this report. The southernmost trench on the claim was not too badly caved and picking into the walls disclosed at the west end a shear zone with quartz stringers probably representing the Cooper vein, and near the east end a quartz stringer 1 to 2 inches wide that contained a 1-inch seam of galena. The trench south of and adjacent to the Extension shaft was also not too badly caved and revealed a quartz vein up to a foot wide that contained a few small specks and streaks of galena. All the remaining trenches were so badly sloughed and filled with debris that no vein was exposed.

Only the northernmost shaft and the Extension shaft were accessible, the former being only about 15 feet deep. The third shaft from the north end of the claim, estimated to be about 25 feet deep was accessible to the top of caved debris at a depth of about 10 feet.

Posts and the backs of openings north and south, indicating some stoping, could be seen, but the stoped area could not be entered.

The Extension shaft is opened and in good condition to a depth of 44 feet; below this it is full of debris. At a depth of 25 feet a drift has been driven N. 25° E. for 15 feet and at a depth of 37 feet, one has been driven S. 10° W. for 37 feet. Another drift to the south at a depth of about 20 feet is inaccessible. The head frame is in good condition, but the hoist house is in a bad state of disrepair.

GEOLOGY

General

The geology of the area is described by A. N. Winchell in "Mining Districts of the Dillon Quadrangle, Montana, and Adjacent Areas" (U. S. Geol. Survey Bull. 574, 1914), and by Uuno M. Sahinen in "Geology and Ore Deposits of the Rochester and Adjacent Mining Districts, Madison County, Montana" (State of Montana Bureau of Mines and Geology Memoir No. 19, 1939). Much of the following discussion is taken from Sahinen.

Rocks in the Rochester and Nez Perce districts are schist of pre-Beltian age that has been intruded by granitic sills and dikes related to but probably later than the Boulder batholith.

Most commonly the schist is coarse-grained feldspar-biotite schist composed of grains of feldspar and some quartz in a matrix of black biotite mica. Locally the feldspar and quartz are drawn out into lenticular masses an inch or more thick and several feet long. The schistosity in general strikes northerly to northeasterly and dips westerly, but local variations in strike and dip are common. Both Winchell and Sahinen believe that the schist represents metamorphosed sedimentary rocks.

Granitic dikes and sills are numerous along a zone about 2 miles wide and about 6 miles long. Sahinen believes that "this zone may mark the crest of a deeply buried granitic ridge--a southward extension of the Boulder batholith--." The dikes and sills range in width from a few inches to several hundred feet.

Veins in the area may be grouped into three fissure systems: (1) those trending northeasterly, (2) those trending easterly, and (3) those trending northwesterly. The northwest-trending fissures are the strongest and most persistent of the three systems but are less persistent in metalliferous mineralization than the veins of the northeast system. They comprise huge lenticular masses of whitish quartz, locally containing sulfides, arranged in crude echelon pattern suggesting fracturing along the crest of a geanticline. Slight lateral movement along the zones of shearing has resulted in tension breaks forming the northeast-trending vein system. These tension breaks undoubtedly permitted freer circulation of metalliferous solutions which resulted in the formation of higher grade ores. Practically all the commercially important veins in the Rochester-Nez Perce area belong to this group. The easterly trending veins are generally much less persistent, narrower, and less uniformly mineralized than those of the other two systems.

Veins of the northeasterly system strike due north to N. 45° E. and dip 25° to 75° westerly, cutting the schistosity at small angles both in strike and in dip. They appear to be made up of closely associated branching bands of quartz enclosing slabs or lenses of crushed, altered, and mineralized schist. Ore occurs in ill-defined shoots which may migrate from wall to wall or may occur in one or more bands within the vein. The erratic occurrence of ore shoots may be due to fissure intersections or to opening of channels by movement along irregular curved fissures.

Minerals found in the northeasterly trending veins include quartz, pyrite, arsenopyrite, galena, sphalerite, and chalcopyrite. In the zone of oxidation, supergene alteration has transformed the sulfide minerals to oxides and carbonates to a probable average depth of 450 feet. The surface portion of the veins consists mostly of quartz, limonite, and highly altered wall rock or horses of altered material

between bands of quartz. Here the gold values have been enriched locally to as much as 5 ounces per ton. Silver values, associated with the gold are also enriched.

Local

According to Sahinen the Cooper vein can be traced for about 3,500 feet on the surface. At the main Cooper inclined shaft the vein strikes N. 70° E., but about 1,500 feet to the northeast it turns sharply north and splits into two branches. One branch continues north, the other follows a strike of N. 35° E. At the surface the vein has an average width of about 5 feet and consists of crushed mineralized schist with ribs of quartz carrying limonite, galena, and cerussite. According to the applicant the Cooper mine has been developed to a depth of 200 feet. In places ore has been stoped to the surface, but much of the near-surface material is very low grade.

On the Extension claim (fig. 1) 7 shafts and 11 trenches roughly located along a northerly trending line apparently follow the north branch of the Cooper vein. From the south end of the claim to about 100 feet north of the Extension shaft the vein strikes about N. 5° E. The strike then swings to about N. 14° E. for the next 350 feet. From here the strike swings to N. 8° W. until it crosses the north end of the claim. Whether the changes in strike occur along one continuous vein or represent different bands along a zone of general structural weakness could not be determined, although I am inclined to favor the latter interpretation. The dip of the vein ranges from about 50° to 75° westerly.

At the northernmost shaft the vein strikes N. 7° W. and dips 66° westerly. The vein zone is about 3 feet wide and comprises 2 quartz ribs in a shear zone. Two samples were taken from the vein in the south side of the shaft, each over a width of 1.5 feet. One from the hanging-wall half of the vein assayed trace gold and 0.1 ounce silver per ton, and 0.1 percent lead; the other from the footwall side assayed trace gold, trace silver, and trace lead. I could find no trace of galena or other lead mineral at this locality.

The second shaft from the north end of the claim is about 20 feet deep. The sides were too steep to be scaled, but the shaft appeared to be on a shear zone similar to the one just described. No carbonates or sulfides of lead could be seen on the shaft walls or found on the dump, but the vein appeared to comprise 2 or 3 narrow ribs of quartz in a shear zone.

The third shaft from the north end of the claim is caved, but from the size of the dump, it is probably not more than 25 feet deep. From this shaft some stoping has been done both to the north and to the south as is evidenced by timbers that are only partly buried by caved debris. In the upper part of the shaft is a zone of shearing about 3 feet wide with a few very narrow quartz stringers. No lead minerals were identified either in this part of the vein or on the dump. The applicant's sample 2, said to have been taken from this shaft, is reported to have contained 8.46 percent lead over a width of 38 inches. Two samples, each 1.5 feet wide, were taken, one from the hanging-wall half of the vein, the other from the footwall half. The applicant was asked to cut these samples in order to include what he considered to be the best material.

The hanging-wall sample assayed trace gold and 0.5 ounce silver per ton, and 0.35 percent lead; the one from the footwall assayed trace gold and 0.6 ounce silver per ton and 0.5 percent lead.

The fourth shaft from the north end of the claim is 12 feet deep, but the sides were too steep to scale. The vein as seen in the shaft walls comprises 1 or 2 narrow ribs of quartz or siliceous material in a zone of sheared schist. No sulfides could be seen in the vein nor were any carbonates or sulfides of lead found on the dump.

The Extension shaft is filled with caved debris below a depth of 44 feet. It was sunk on a shear zone up to 3 or 4 feet wide that contains overlapping ribs of quartz up to several tens of feet in depth and length. The quartz is heavily stained by oxides of iron, but no sulfides were seen. In a trench adjacent to the south side of the shaft are lenses and stringers of quartz that is less iron stained and contains a few specks and grains of galena. Three short drifts have been run from the accessible portion of the shaft, 2 to the south and 1 to the north--the south drifts at depths of about 20 feet and 37 feet, respectively, the north drift at a depth of 25 feet. Only the drift to the north and the lower drift to the south could be followed to the face at distances of 15 feet and 37 feet, respectively. On the levels the vein ranges from a few inches up to about 3 feet in width, strikes from N. 10° to 25° E. and dips from about 50° to 60° westerly.

A sample which the applicant cut from a locality he selected in the north drift assayed 0.01 ounce gold and 0.15 ounce silver per ton, and 0.15 percent lead over a width of 1.5 feet. Two samples cut by the examiner from breast of the lower drift to the south assayed a trace gold and 0.5 ounce silver per ton and 0.7 percent lead over a width of 0.7 feet on the footwall side of the vein, and 0.02 ounce gold and 1.1 ounces silver per ton, and 1.0 percent lead over a width of 1.25 feet on the hanging-wall side. From the trench on the south side of the shaft the applicant took his sample 4 which is reported to contain 5.62 percent lead.

The two southernmost shafts, 40 feet deep and 10 feet deep, respectively, were too steep to enter. The vein appears to be essentially the same as that exposed in the shafts to the north. From the surface at the southernmost shaft the applicant took his sample 1 which assayed 0.66 percent lead.

All trenches and shallow pits on the Cooper vein except the southernmost one and the one south of the Extension shaft were so completely caved and filled with debris that no vein was exposed. In the southernmost trench at the west end a shear zone about 2 to 3 feet wide containing a few quartz ribs is exposed, but no sulfides or carbonates of lead were observed. Near the east end of this trench is a quartz vein 1 to 2 inches wide which contains small nodules of galena. It strikes about N. 18° E.; the dip was to the west, but the degree of dip could not be determined. Apparently, this is the easterly split in the vein to which Sahinen refers, but, if so, his "Cooper main shaft" is not the one so indicated by the applicant as the main shaft. The Shoemaker shaft is just south of the Cooper claim and it is possible that he refers to that one.

The Cooper shaft indicated on figure 1 is the source of the production given in the application. The shaft was not entered, but from the applicant's records drifting has been done on four levels as follows:

45 level - 50 feet north to 120 feet south on a vein 30"-48" wide

100 level - 37 feet north to 130 feet south on a vein 20"-40" wide

150 level - 70 feet north to 90 feet south on a vein 20"-40" wide

200 level - 60 feet north to 50 feet south on a vein about 18" wide

Thus this shaft has developed a block of ground having an average length of 150 feet, a depth of 200 feet containing a vein having an average width of about 2.5 feet. The vein tonnage developed was therefore: $\frac{150 \times 200 \times 2.5}{15} = 5{,}000$ tons. From this inferred tonnage reported shipments of ore total 98 tons having an average content of 0.29 ounce gold and 27.2 ounces silver per ton and 29.0 percent lead, 0.7 percent zinc, and 0.4 percent copper. Although the individual shipments were high grade, as they would have to be for direct shipping ore, they were small in bulk and erratically spaced, suggesting either small ore shoots or considerable hand sorting, possibly both. As no shipments have been made since 1940, it is probable that any remaining ore is low grade.

Enclosure
Distribution:
CME(3)
USGS(SRO)
Docket
MacLaren

1. Financial Eligilibility;

(a) Enclosed.

(b) Sole Operater, Sole owner.

(c) From a 10% royalty of a lease on the Shoemaker Mine which is working at the present and has been since November 10, 1959.
At the present time have approximately $2000.00 as a working captal.

2. Applicants Rights in Land:

(a) Owner with full rights, as locator and owner. Recorded at Virginia City, Madison County, Montana in Book # 32 of Lode Locations at page 84.

(b) Located in Section #6 in township 3S,R7W of the Montana Principal Meridian. Also owner of the following claims; Cooper, Shoemaker, and Extension. two thirds interest in the North Star, New Mine, Gold Coin & Columbus, as recorded in volume 189 of Deeds at Page 453, recorded at Virginia City, Mont.

3. Physical Description:

(a) Enclosed:

(b) Have done most of the surface trenching myself as assessment work the last eight years. Own full title and clear with no encumbrance.

(c) The data on production is unavailable. To the best of my ability the information I have found relates to;
The following is a record of shipments from the Cooper Mine near and ajoining the extension in the Rochester Basin in the Rabbitt Mining District.

Date	Dry Wieght	Au Ozs.	Ag Ozs	Pb%	Cu%	Zn%	As%	Sb%
8/1/35	10 tons	.23	8.8	1058	2.8	3.4	3.4	.05
10/8/36	2	.14	41.7	53.3	.02	1.6	2.0	.15
8/15/39	4	.18	8.7	10.9	.6	4.8	1.5	.15
7/5/40	71	.29	30.4	33.1	.2	0	3.7	.15
9/18/40	11	.31	27.8	23.7	.01	1.0	2.7	.10
			23.48	26.3	.70	1.0		

As of the returns of the American Smelting and Refining Company of East Helena, Montana dated the 12th day of April 1960.

/s/ S. M. LANE

(d) Lots of indications as structure and formation places have vein exposed but too small for production on a paying basis commercialy.
Sample sheet enclosed.

(e) Vein extends full length of a mile or more with out croppings with approximately 50 degree pitch where it has been sunk on enough to estimate the angles, most samples have been made with buck board and pannings.

(f) Indications as well as mining Engineers advice and personal experience.

4. Accessibility of Property:

For information and directions concerning Property, contact Robert W. Dickie 1269 East 2nd Street, Butte, Montana, Phone 2-5453, or Memoir #19 Plate 5.

4. Continued.

Based from G.L.O. Township plats Geology by Dunn M. Schinen, 1934.

(b) Open road except for short periods of winter storming always able to get to and from with a pickup truck all year around.
Nine miles from Twin Bridges, Montana, and approximately eleven miles from Melrose, Montana.

5. Exploration Work:

(a) Expect to sink shaft at least 150 feet deep with a cross section 4X8 feet outside of timber, and drift as well as crosscut not less than 600 feet. Approximately 100 to 150 feet of cross cut and sample hanging wall lead.

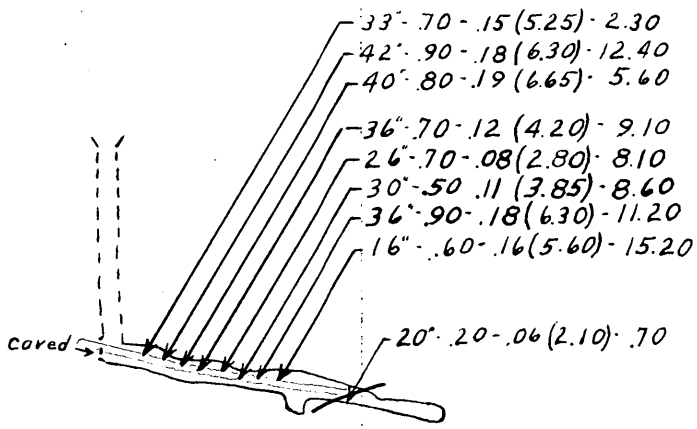
(b) Access road does not have to be built.

(c) If contract is granted, work would be started in thirty days or less. Expect to be finished in eighteen months or less depending on conditions. Expect to advance at least five feet per week in sinking shaft with timber, all essentials and assessories. (five days)

6. Experience:
Have had twenty six years experience as miner and operator, and, lessee. I will supervise the work with the help and advise of a consulting mining engineer and geologist, Homer B. Hunt.

7. Estimate of costs:

(a) Cost of sinking shaft; $43.62 per foot. This includes pipe, ladders, timber, vent pipe, powder, and primers, bits, steel, gas, oil , and all costs of operation insurance included.
On a 6X3½ foot drift the cost $14.47 per foot. Would like to sink at least 150 feet, would like to drift at least 600 feet.
I have an additional expense of moving in and setting up my equipment: hoist, compressor, head frame. This is all stationary equipment. At a cost of twelve hundred dollars. For a total amount of this loan of 16,525.00 dollars.



N

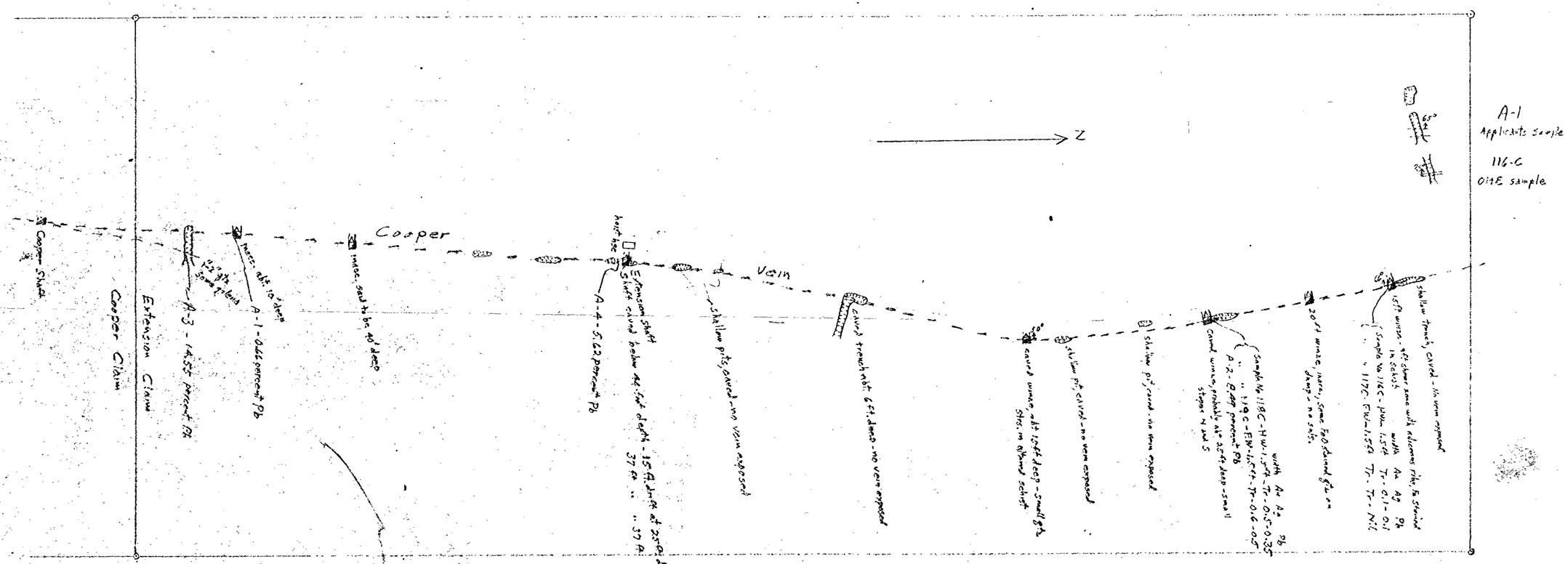
Order of values: Width of sample; ozs. per ton of silver; ozs. per ton of gold; gold value per ton at $35 per oz.; percent zinc.

U.S. GOLD CORP.

Zinc Vein (Lucky Strike)
Assay Map
Scale: 1" = 50'

Samples taken by E.W. Stevens and C.E. Graham, Aug 3, 1950

DMEA-2367



Plan Showing Surface Workings

Extension and N. End Cooper Claims

Robert Weston Dickie

Madison County Montana

Scale

100 50 0 100 Feet

October 1960 D.R. Mackaren

Figure 1