MR-115-07

SUMDUM

1959 R.H.S.

SUMDUM PROJECT

December, 1959

SUMMARY AND CONCLUSIONS

The 1959 exploration consisted of diamond drilling fourteen A.X. holes totalling 5394 feet and some open-cutting, at a total cost of roughly $83,000. Eight of these A.X. holes totalling 2931 feet were drilled in No. 3 area, and six totalling 2463 feet were drilled in No. 5 area. Copper assays were made on 216 sections of split core and 51 channel samples from open cuts. A number of samples were composited in weight ratio corresponding to the length represented and assayed for zinc, gold, silver and iron. The work indicates a remarkably long and probably continuous zone of sulfide, but does not disclose any ore shoots.

The outcrops have now been examined on practically all the exposed zone, and it is believed that the drilling has tested the two areas of highest grade mineralization. Further work on the mineralogy is required to determine if any unrecognized valuable constituents are present, and this work is planned in co-operation with the local university. The U.S.G.S. field men have expressed interest in mapping the area next field season; all pertinent data are being supplied to them.

RECOMMENDATIONS

No further exploration is recommended for 1960. The zone does contain appreciable quantities of copper and iron sulfide, and should be held by patent if costs are not too great. The feasibility and costs of patent are being investigated.

INTRODUCTION

The showings were discovered in August, 1958, by Alaska Helicopter Syndicate prospectors under the direction of L.M. Anthony. After examination by R.H. Seraphim on August 31, 1958, a small trenching crew supervised by R.N. Roby was dispatched to the property. The work showed appreciable copper values in the areas designated No. 3 and No. 5. The 1959 drilling and trenching program began in mid June, and was completed in mid September. Inclement weather hampered work throughout most of the latter part of the season; areas which had been completely free of ice and snow in 1958 remained covered in 1959.

Maps accompanying this report are:

1. A 1000 ft. = 1 in. map prepared from aerial photographs showing location of the mineral zone with specific areas numbered.
2 and 3. Two 40 ft. = 1 in. maps showing drilling and trenching with assay data in No. 3 area (east and west sections).
4. A 100 ft. = 1 in. map and longitudinal section showing some reconnaissance mapping in No. 4 and No. 5 areas.
5. A 40 ft. = 1 in. map showing drilling and trenching with assay data in No. 5 area.

LOCATION AND ACCESS

The showings lie along the west slope of Mt. Sumdum in Sumdum (D-5) Quadrange, Alaska. A temporary beach camp was established in early June at the abandoned Indian Village below Sumdum Glacier. Machinery and supplies were barged to this camp and lifted by helicopter to the upper camps at No. 3 and No. 5 areas.

The slope between No. 5 area and the beach camp was explored thoroughly during a search for a lost drill-helper. Although this ground is locally precipitous, it was reported that a road could be constructed through it with a minimum of rock work.

Several trips were made on foot between No. 3 area and the beach camp, and reports suggest similar conditions pertain there. One south-flowing tributary to Sumdum Creek is incised in a narrow canyon which would require a fifty- to one-hundred-foot bridge, or a circuitous route to the north of the canyon.

CLAIMS

Forty-five claims were staked and recorded in 1958, and a further 18 claims were added in 1959 to cover possible extension to the south. All work performed in 1959 was recorded; much of it was completed prior to September 1st and is not applicable for assessment to hold the claims after September 1st, 1960. However, it can be applied towards the $500 worth of work per claim required for patenting. The patenting of approximately 15 claims would hold the known deposit under the pertaining apex laws.

A brief examination was made of the Neglected Prize showing. The U.S.G.S. report on this property (Bulletin 998-A) contains a reliable description and assay data. Exploration of this deposit is not recommended, and our claims covering the showing thus should be permitted to lapse.

GEOLOGY - REGIONAL

No new work in the area has been completed since the publication of U.S.G.S. Bulletin 998-A, which was quoted in preceding reports on Sumdum.

GEOLOGY - LOCAL

Host rocks in the mineralized area are an assemblage of gneisses and schists with a few small 'bull' quartz lenses. The laminations in the gneiss and schist are composed of various proportion of quartzite, micas - predominantly brown biotite but including minor muscovite locally, chlorite, and minor amphibole (probably actinolite) and garnet. The percentages of these components change markedly across strike; the core-logs give the estimated percentage in the sections drilled.

Two lamprophyre dykes are known in No. 3 area. One of these follows a fault which offsets the mineralized zone about 30 feet left-hand.

The small cross-fault above-mentioned is the only disrupting fault known or suspected along the mineralized zone. Pre-mineral shearing following the strike of the zone is probably

related to the folding. None of the highly schistose bands were found cutting through the folding.

No. 5 area has much clean outcrop between remnants of glaciers, and sufficient relief to expose cross section even without the drilling information. The area contains numerous drag-folds, practically all of which plunge southerly from 05 deg. to 28 deg. A few of these plunges are shown on the 100 scale map. Several folds with closures of at least several hundred feet, and amplitudes which are considerably greater, are exposed on the cliffs west of the mapped area. One of these, estimated to be about 700 feet west of No. 4 area, is probably the same one which is exposed on the cliff just south of the campsite at No. 5 area. The 100-scale reconnaissance mapping indicated that the mineralized zone itself is on an almost isoclinal anticline. A sketch, in part hypothetical, of the possible sequence of folding, and the relation of the mineralization in No. 5 area, is shown.

The sulfides apparently replaced a transition zone between upper micaceous quartzite and lower chlorite schist, along the crest and on both limbs of an anticline. The mineralization tails out upward on the fold crest into the more pure quartzites. The transition zone, or contact, is very irregular because of the practically isoclinal drag-folding in the northern part of No. 5 area, but on the nunatak (rock island in a glacier) at the south end of No. 5 area the contact is more definite and the quartzites, although folded in detail, lie almost flat on the fold crest.

The top of the ridge between No. 4 and No. 5 areas is predominantly quartzite, and the mineralization is practically non-existent along the fold crest there. However, the mineralized outcrop designated No. 4 area is considerably lower in elevation, and appears by projection from No. 5 area to lie almost on the quartzite - chlorite schist contact.

The outcrops in No. 3 area are not large enough to discern the larger folds by direct observation, and no geological mapping was done to permit their determination by the sense of drag-folding. The projection of the quartzite - chlorite schist contact on the fold crest from No. 5 area to No. 3 area (see 1000-scale map) indicates that the mineralization in No. 3 area is 500 to 1000 feet down the limbs of the structure. This gives a minimum of the vertical extent possible in No. 5 area. The presence of the two major bands of mineralization in No. 3 area corroborates the indicated structure, as these two bands probably represent the two limbs of the anticline. Moreover, the drilling in No. 3 area shows predominantly quartzite west of the west band of sulfide, chlorite schist between the two bands, and quartzite near the east band.

The nunatak between No. 3 and No. 2 areas is predominantly quartzite and apparently lies west of the mineralized zone.

No. 2 area was not re-examined in 1959. Assuming the fold structure outlined does not have a warped crest, the mineralization there would be roughly 2000 feet down one of the limbs.

The above interpretation of the structure adds weight to the indication that mineralization is probably continuous from at least the north end of No. 3 area to the south end of No. 5 area, a distance of 9500 feet. This would include the section under Sumdum glacier and following the fold plunge under the ridge between No. 4 and No. 5 areas. It also suggests a vertical range of mineralization of at least 2000 feet.

Unfortunately, it does not suggest any location where more valuable sulfides might be found. The relief along the zone provides natural exposures of the mineralization at different distances below the quartzite - chlorite - schist contact on the crest. No secondary structures, other than the numerous drag-folds aforementioned, are known which might produce disruptions along the major structure and provide loci for ore shoots.

The entire anticlinal area near the quartzite - chlorite - schist contact contains a 'background' of about 5% disseminated sulfides, mainly pyrite and pyrrhotite. Lenses of massive sulfide from a fraction of a foot to several tens of feet thick are capped by drag folds within the anticline. These lenses, where exposed, can be traced for hundreds of feet along strike and down dip.

Pyrrhotite, pyrite, chalcopyrite, sphalerite, and locally a few grains of galena, are the sulfides noted. The pyrrhotite and pyrite are predominantly very coarse grained. A sample of typical sulfides submitted to the U.S. Bureau of Mines was reported on as follows:

"This sample consists predominantly of pyrrhotite and pyrite, subordinate chalcopyrite and sphalerite, and small amounts of biotite, quartz, and amphibole.

Polished-section examination for textural relationships shows that anhedral to subhedral pyrrhotite and pyrite are microscopically veined by chalcopyrite and sphalerite. Most of this veining appears to be guided by pyrite and pyrrhotite grain boundaries. Often irregular islands of pyrrhotite occur in chalcopyrite.

Sphalerite and chalcopyrite are commonly intimately associated. Blebs and islands of chalcopyrite and sphalerite occur within one another. In most areas, the textures between sphalerite and chalcopyrite appear to be mutual.

X-ray spectrographic analysis indicated the presence of very small amounts of nickel, but no platinum. Most probably the small amount of nickel present occurs largely as microscopically indiscernible pentlandite in pyrrhotite, though it also may substitute for iron in the pyrite crystal lattice."

Some further test work to determine if any valuable constituents remain undiscovered is in progress at U.B.C.

ASSAY DATA

None of the diamond drilling or open cutting disclosed any mineralization approaching ore under current conditions. A summary, with weighted averages, of the intersection widths of the main sulfide sections in drill holes and trenches is given below. The copper content in these is calculated from individual assays representing 10 feet or less. The zinc, gold, silver, and iron were assayed from composites of the copper samples, with due weight in the composite given to the individual lengths represented by the component samples. Iron content was assayed because of a possible market in Japan. However, the Japanese have not yet shown a desire to enter into long-term contracts for iron concentrates.

The original 1 and 2 trenches in No. 3 area are not included in the summary because assays from them are not considered representative of fresh sulfide. No. 1 trench was re-examined when the snow left it in late August. It does not contain enough chalcopyrite to produce the copper content obtained in last year's sampling. A shallow zone of secondary 'sooty' chalcocite is probably responsible for an important part of the high copper content obtained.

The west zone in No. 3 area is not averaged as the mineralized zone there is erratic, particularly on the north side of the lamprophyre dyke.

R. H. Seraphim

NO. 3 AREA - East Zone

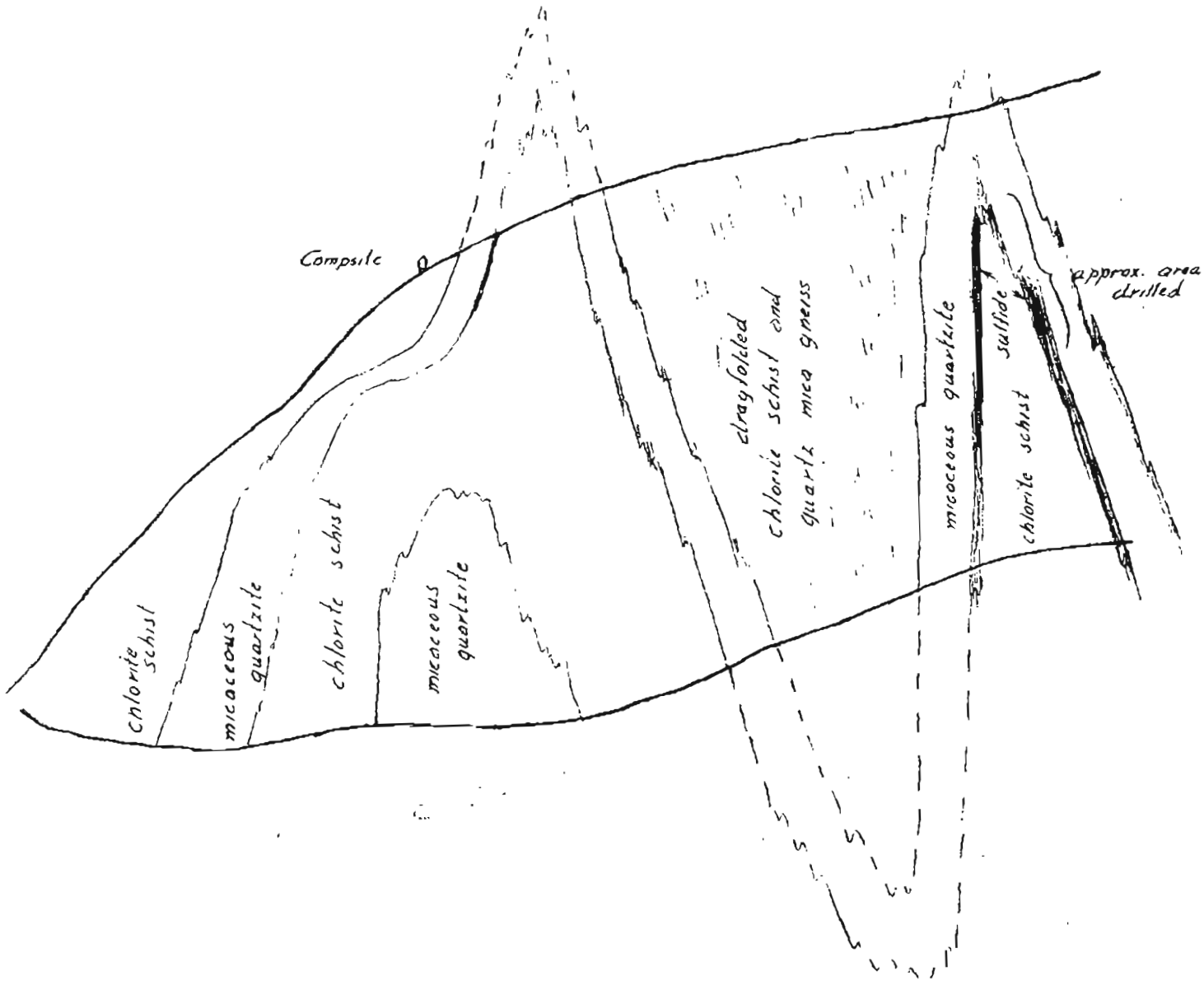
D.D.H. (or trench)	Width	Cu %	Zn %	Au. oz.	Ag. oz.	Fe %
4	7.8	1.29	0.10	Tr.	0.44	33.2
3	31.0	1.29	0.10	Tr.	Nil	38.5
2	15.0	0.64	0.10	Tr.	Nil	25.4
1	24.0	0.90	0.15	Nil	Nil	38.0
6	15.0	1.36	0.15	Tr.	0.48	37.3
5	45.0	1.15	0.10	Tr.	0.24	39.7
7	16.0	1.55	0.50	0.04	0.88	32.4
8	35.0	0.48	Nil	0.01	0.28	16.3
Average	23.6	1.03	0.25	0.005	0.25	32.7

NO. 5 AREA - EAST ZONE - D.D.H. #1 EXCLUDED

2	10	0.28		Not Assayed		
3	15	1.12	1.35	0.02	1.20	23.7
6	86	0.16	0.25	0.02	0.30	8.9
4	40	0.19	0.30	Tr.	0.12	10.8
5	22	0.18	0.05	Tr.	0.20	11.0
Roby	50	0.62	0.66	Tr.	0.60	n.a.
Average	39	0.34	0.41	0.01	0.39	11.0

NO. 5 AREA - WEST ZONE

1	25	1.25	0.35	0.01	0.32	27.5
2	30	1.37	0.25	0.03	0.40	33.1
cut	54.5	1.09	0.35	Tr.	Nil	11.9
3	40	1.53	0.30	0.02	0.52	16.9
6	32	0.46	0.90	Tr.	0.22	26.8
4	40	0.39	0.50	0.02	0.08	18.3
5	50	0.47	0.75	Tr.	0.18	21.0
cut	36	0.59	0.35	Tr.	0.20	13.7
cut	52	0.29	0.30	Tr.	0.16	13.6
Average	35.9	0.77	0.434	0.008	0.214	19.1



#5 Area

sketch of section looking north - hypothetical in part - 200' = 1in

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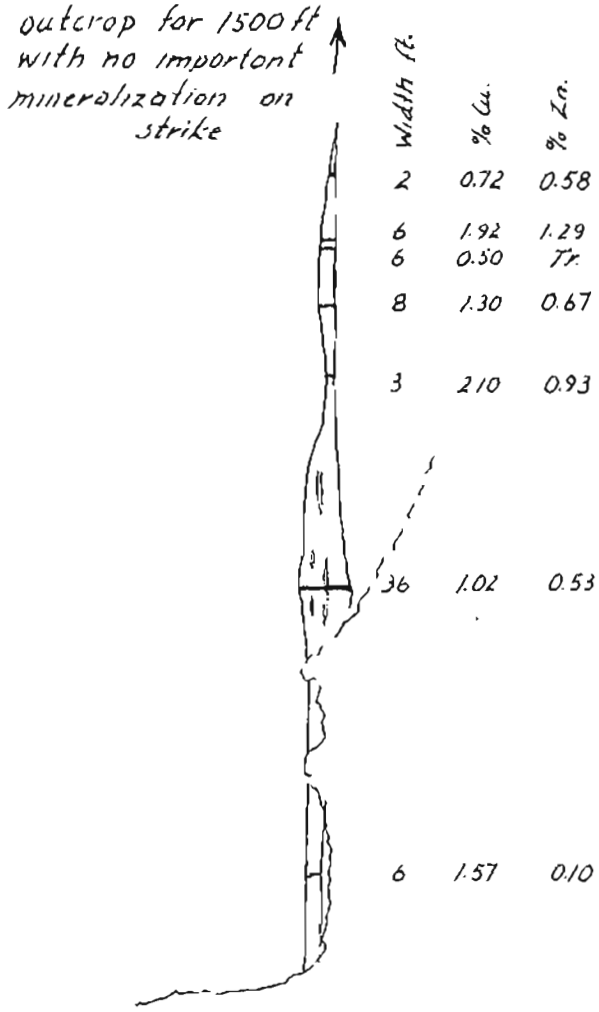

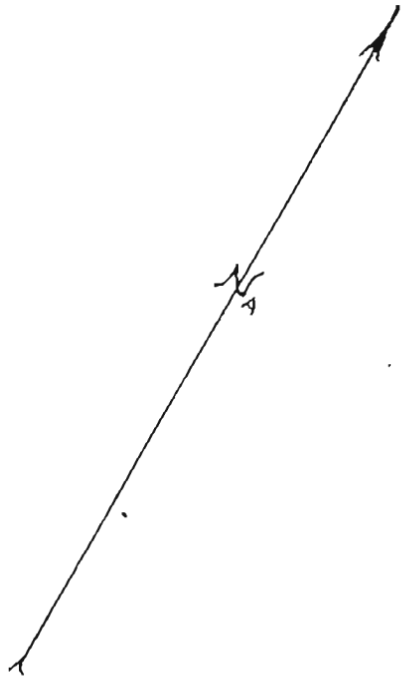

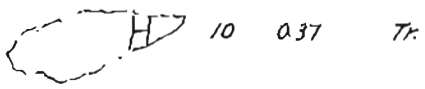

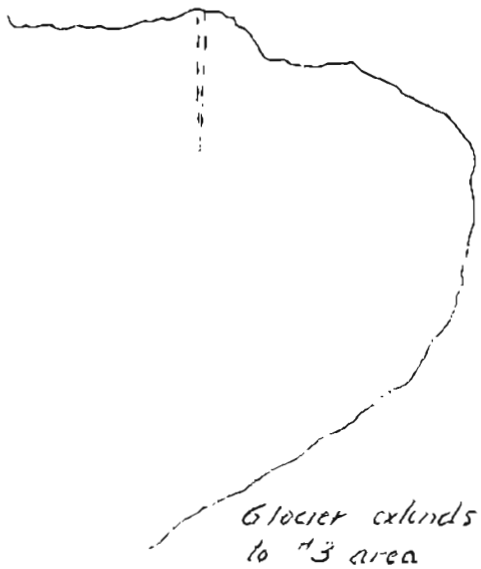

#2 Area
100' = 1 in.

Sept/58 R.H.S.