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HUSKY SYNDICATE

REPORT ON 1967 FIELD WORK IN THE DEZADEASH AREA,

YUKON TERRITORY

January, 1968
Vancouver, B. C.

J. B. P. Sawyer.

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INTRODUCTION:

A recommendation made by this writer in February 1967 to assign one prospecting team to search for copper mineralization in Triassic basic igneous rocks of the Kluane Ranges as part of the 1967 program of Husky Syndicate was accepted by management. It was decided to begin field work in the Mush Lake - Bates Lake area concentrating on the volcanic rocks of the Mush Lake Group. A two-man party led by T. E. Fenton was landed from a fixed wing aircraft on Mush Lake on May 29th and over a period of three and a half months carried out detailed prospecting and reconnaissance silt sampling covering an area of approximately one hundred and fifty square miles. In addition, a group of seventy-two claims were staked on copper showings in the Virgin Creek area (see Figure 2).

The program was designed specifically as a prospecting effort to search for copper mineralization, (chalcocite, chalcopyrite, bornite, native copper, similar to other known occurrences in this type of geological setting) in basic volcanic rocks and in that new occurrences of this type of mineralization were discovered over a considerable area along the prominent ridge lying between the headwaters of Virgin Creek and Dalton Creek, the program must be considered to have been successful.

The 1967 field work was restricted solely to prospecting since neither sufficient time nor suitable personnel were available to enable any follow-up work to be done to evaluate these occurrences. It remains now to carry out a careful assessment of them. This should be done as early as possible in order that a decision regarding possible further work can be made before the expiry dates of the claims which were staked to protect these showings, (HUSKY 1 to 48, and 65 to 77).

Other companies, including Homestake, Granby, Lytton Minerals, and Geophoto Services were active in the area. Homestake and Granby investigated the five groups of claims - Expo, Robin, Raven, Wren, (Homestake), and Bounty (Granby), -- which they had staked on the basis of aeromagnetics late in 1966. The only place in which any mineralization of interest was found was on the Wren Group which lies at the south-east corner of the Husky claim group. Lytton Minerals were engaged in a geochemical prospecting program and although they covered the area of the Husky showings with soil sampling traverses they failed to find the mineralization. Geophoto Services were engaged in follow-up work resulting from their 1966 reconnaissance program and concentrated their work in the area of the old copper showing situated at the head of Mush Creek, about six miles south of Mush Lake. Neumont Mining Corporation had a prospector in the area briefly late in August.

WORK DONE BY HUSKY SYNDICATE:

The area prospected by Fenton and Marshall is indicated on the accompanying map, Figure 1. The party was transported to the area, and for the greater part of the season serviced by, fixed wing aircraft using Mush, Bates, Seckeyo, and other smaller un-named lakes. A helicopter (Trans North Turbo Air Ltd.) was used on two occasions to move the crew in areas where fixed wing landing was impossible. To speed up staking and assist in more rapid coverage in the area of the showing in the Virgin Creek area use was made of the Bullock Helicopters C3-B1 machine based at Dezadeash Lodge during August. For travel on Mush Lake and Bates Lake, use was made of a rented boat and outboard motor, which greatly facilitated work.

Geochemical sampling was carried out in conjunction with prospecting. Stream silt samples were collected whenever possible and some soil samples were also taken. Cold extraction tests for copper were carried out in the field and all samples were also submitted for laboratory analyses.

Results of this work are plotted on base maps on a scale of one inch equals one half mile, in two sheets, Bates River and Mush Lake. Two separate plots of each sheet have been prepared and are included with this report. One sheet shows silt sampling results only and the second sheet is a composite plan including all available data.

Copper mineralization was found in place at four locations:-

1. On the south shore of Mush Lake at its eastern end.
2. North of Mush Lake at its western end.
3. About five and a half miles west-south-west of the southern end of Bates Lake, just south of the smallest, and most westerly, of a chain of four lakes which drain into Bates Lake.
4. Along the valley of Virgin Creek and on the ridge which divides the valleys of Virgin and Dalton Creeks.

These are dealt with more fully below. The only occurrences which warrant further work are numbers three and four.

1. South Shore of Mush Lake

This is a previously known showing on which some claims had been staked in the past and had lapsed (former Sandy claims). The mineralization consists of chalcopyrite in andesitic volcanics and is exposed for about thirty feet along the shore of the lake. A grab sample of this material returned an assay of 0.55% Cu. Two lines of soil samples were collected over this area. The first was along the shore of the lake in an east-west direction and the second, parallel to the first, was located approximately five hundred feet to the south. The lines extended for a length of about seven thousand feet. A plot of the results of analyses for total copper on these samples is included with this report (Figure 3). Several anomalous values are included with these results indicating that soil sampling is an effective tool here, but the sampling was not extensive enough.

to reveal any real pattern. While more complete soil sampling coverage may reveal a more continuous zone it is felt that the chances for any deposit of economic value occurring here are not good and no further follow-up is recommended.

2. North of Mush Lake

The mineralization is chalcopyrite with minor secondary chalcocite in a quartzitic host rock. Fenton reports the strike to be east-west and the dip about 15° to the north. A chip sample across twenty-five feet, taken by Fenton, returned an assay of only a trace of copper. This occurrence is not considered to be important and no further work is recommended.

3. West-South-West of Bates Lake

In the area to the west-south-west of Bates Lake, T. Fenton found minor amounts of chalcopyrite mineralization associated with calcite stringers and veinlets in greenish andesitic volcanics. A proper investigation of this occurrence was not possible due to the fact that access to this area was gained by helicopter and the snowing was only found on the day before a scheduled camp move. Lack of availability of a helicopter and of time made it impossible to return to the area later.

It is apparent from the results of silt sampling in this area that several streams carry anomalous amounts of copper and this fact, together with the known occurrence of chalcopyrite in place in this general area, warrants further investigation.

4. Virgin Creek - Dalton Creek Area

Late in July Fenton's party moved into the Virgin Creek valley to continue prospecting to the north of the area which they had worked from Mush Lake earlier in the season. Copper mineralization was discovered on both sides of the valley, but the most interesting and significant occurrences are on the high ridge which separates the valley of Virgin Creek from that of Dalton Creek to the east.

Along the western flank of the valley chalcopryite is almost exclusively the only copper mineral found. A few small zones of quite heavy malachite staining were also found in volcanic rocks along this side of the valley, but in general the amount of copper mineralization on the western side of Virgin Creek appears to be minor in amount, and importance. On the east side of Virgin Creek chalcopryite, bornite, chalcocite, cuprite, native copper, mineralization occurs in intermediate to basic volcanic rocks over a considerable area along both sides of the dividing ridge which rises to over six thousand feet between Virgin Creek and Dalton Creek. Prospecting coverage achieved was not exhaustive along the whole length of the ridge, due mainly to poor weather conditions which restricted work at the higher elevations in late August and early September, but copper mineralization was found in outcrop in at least eight separate places. In addition, several areas of well mineralized

float and/or loose frost heaved material were also located, e.g. at *S-18-67 and S-13-67. These are usually located fairly high up on the ridge and are thus probably locally derived.

Within the host rocks the distribution of copper mineralization appears to be quite erratic, and specific controls for its localization are not apparent. In some instances fracturing appears to be important and chalcocite is frequently more abundant in fractured or brecciated rock. This is not, however, always true and chalcocite also occurs in irregular aggregates and patches in a massive host. Amygdaloidal phases are fairly commonly represented among the volcanic assemblage and in some instances chalcopyrite and/or its oxidation products fill the amygdaloes. For the most part, however, the copper minerals, particularly bornite, occur in randomly distributed, irregular "blobs" and patches within the mass of the volcanics. Native copper is more rare, but occurs finely disseminated through the volcanics in some places. Cuprite, though not abundant also occurs in some places and is almost certainly secondary in origin, as are malachite and azurite which accompany the copper sulphide minerals on some weathered and exposed surfaces. These latter (chalcopyrite, bornite, chalcocite) are probably all of primary origin.

Geological work was limited to observations made while prospecting and visiting showings located by the prospecting team. No detailed or systematic geological mapping was possible with the time and personnel available. The following generalizations are pertinent.

*S-18-67 refers to field observation location, and/or specimen number, recorded by Sawyer. These are located on the composite plan, Figure 5.

1. Textural variations e.g. presence or absence of vesicles, grain size, etc. reflect differences in cooling conditions within individual flows. Alternation of these textural variations indicates that several separate flows are represented within this volcanic sequence and from the limited field work done there is a suggestion that they have been affected by regional tectonic movements and are no longer flat lying. This would certainly be favourable from the point of view of a mining operation should sufficiently high grades be established in any particular section.

2. Sedimentary rocks are not abundant in this immediate area. Towards the north end of the ridge a narrow band of shale striking 095° true is exposed in outcrop at S-15-67. Dip is 34° N.E. This is separated by about seventy feet of volcanics from a more steeply dipping (60°) limestone band (S-17-67). Further south, cherty, possibly tuffaceous, rocks are to be found among the volcanics. These are mineralized in places.

It had been planned to use a tractor to attempt to trace the origin of some of the areas of mineralized float, such as in the area of S-18-67. On instructions from Vancouver this work was held up to await the arrival of the Syndicate Manager. Due to a delay in his arrival the work was never begun. By early September weather conditions had deteriorated to the point where work at the higher elevations was not feasible. Normally the crew would have been

evacuated from the area at this stage. They remained until September 11th awaiting the Manager's expected arrival. While waiting, and because there was little else that could be done at this stage, a trench was excavated in bedrock for about thirty feet, to join three isolated small zones in which chalcopyrite-bornite mineralization had earlier been observed, close to the camp. The trench was sampled and returned only low assays. A sketch of this is included with this report (Figure 4). The only point I wish to make here is that this trench was not located on the best mineralized area, as has been suggested, and under normal circumstances probably would not have been put in at all. The results of the sampling of this trench should, therefore, be disregarded in assessing the merits of this area.

GEOCHEMISTRY:

Fairly detailed silt sampling coverage was obtained on Virgin and Dalton Creeks and their tributaries. The threshold value for HCl copper for this whole area of volcanics is of the order of 70 p.p.m. From an inspection of the results on the Mush Lake sheet it is apparent that several of the streams draining from the ridge on which the copper mineralization was found are anomalous in copper and that the greater part of the area from which they are draining is covered by the Husky Claim Group. The highest values in the centre of the claim group are about three times background. The headwaters of Dalton Creek which drain from the area to the north of the claim group are also anomalous and would suggest that further prospecting to the north of the claims might be rewarding. Four samples collected from the lower part of Seloud Creek are highly anomalous, possibly due to native copper which is known to occur in gravels on this creek. Acid to intermediate volcanic rocks outcropping in this immediate area carry fairly abundant disseminated pyrite, but no copper minerals were observed.

Pyrite is not very common in the copper bearing volcanics with the result that there has been, apparently, very little leaching. This is reflected in the relatively low order of values obtained in the geochemical work done in this area.

Reconnaissance soil sampling was carried out on a trial basis using claim lines for control. In general, results were not useful, values being of a uniformly, relatively low order, with no anomalous values being detected. This is probably a reflection of the lack of leaching action and also of the poor soil development along the ridge.

Lithochemical techniques might be helpful. Powdered rock produced in drilling holes for blasting in the one trench which was excavated was collected and analysed for copper. A few additional holes were drilled in the same area, away from the trench, to provide powdered rock for analysis. A total of eleven samples of powdered rock were analysed. The results are plotted in Figure 5.

The line of the trench represents a trend linking the three isolated, minor occurrences of mineralization mentioned earlier. From a consideration of the results shown in Figure 4 it is apparent that the three samples taken away from the trench but in line with its general trend, samples 5, 10 and 11, show higher values in copper than samples 6, 8 and 9, which are away from the trench and off the line of its general trend. Similar sampling over a greater area might prove helpful in establishing trends of copper mineralization within the volcanics particularly in view of the fact that due to its patchy and erratic distribution this information may not always be obtained visually. This type of lithochemical sampling is quickly and cheaply carried out and often provides useful guides for more sophisticated work, conventional sampling, drilling, etc.

CONCLUSIONS:

1. The prospecting program carried out in the Dezadeash area by Husky Syndicate in 1967 was successful in locating copper mineralization in rocks of the Mush Lake volcanic series.
2. Bornite, chalcocite, chalcopyrite, native copper, cuprite, occur irregularly distributed within andesitic and basaltic lavas. The occurrences appear to be erratic and more detailed work is required to establish (a) what the controls for this distribution might have been, (b) whether an economic grade of mineralization overall could be obtained.
3. The number of occurrences of copper mineralization in place, as well as occurrences of mineralized float, over a considerable area, indicate that further work as indicated in 2 above is justified. Assays of up to 10% copper have been obtained from grab samples. For a large tonnage operation an overall grade of around 1% might be reasonable and realizable from this type of occurrence.
4. Indications from the limited work done are that the geological and structural conditions are favourable.
5. Geochemical results from stream silt sampling are positive.
6. Access to the area can be had by road from Dezadeash and Dalton Creek, thus transportation would not be a costly factor in the performance of further work.

7. The amount of mineralization visible in this area exceeds that seen in the Burwash area where Newmont Mining Corporation carried out an extensive program in 1967. The seventy-two Husky claims staked in this area cover the most favourable part of the mineralized sequence as presently known.

8. This occurrence is in essence similar to the copper occurrences presently being extensively investigated in the Coppermine River area of the Northwest Territories, and in other areas of Canada.

RECOMMENDATIONS:

It is recommended that a full assessment of the copper occurrences in the area of the Husky Claim Group in Virgin and Dalton Creek area of the Yukon be carried out. This should include the following work:

1. Geological mapping on a scale of four hundred feet to the inch should be carried out to determine if possible, the factors controlling the mineralization, the most favourable zones, the thickness and attitude of the flows, etc.
2. Careful and detailed sampling of all the showings should be carried out to determine what grades might be expected.
3. Prospecting coverage should be completed. Since T. E. Fenton is familiar with all the presently known showings, and was responsible for finding most of them, it would be advantageous to re-hire him to do this work. With other men on the property Fenton could prospect alone and would not require a second man.

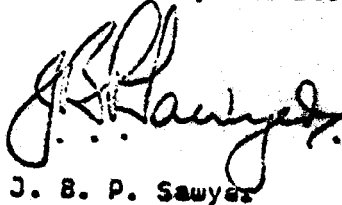
The above work could be achieved with the following personnel:

1. One geologist and assistant to carry out the geological mapping and to supervise and co-ordinate the sampling and prospecting;
2. A first class powderman/sampler and say two assistants;
3. One prospector.

A small base camp with a cook could be set up easily, right on the property. Supplies could be brought in by road.

It is probable that work could be commenced on this project in mid-June and it should be possible to complete enough work with the crew outlined above by early August to reach some definite and well founded conclusions on the merits of these occurrences.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "J. B. P. Sawyer".

J. B. P. Sawyer

JBPS:ds

January, 1958
Vancouver, B. C.

NOTICE

THIS MAP IS ISSUED AS A PRELIMINARY GUIDE FOR WHICH THE DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES WILL ACCEPT NO RESPONSIBILITY FOR ANY ERRORS. IN CASE OF DISCREPANCIES WHATSOEVER ON THE SUBJECT OF ALLOTTEE SURVEYS HAVE BEEN MADE.

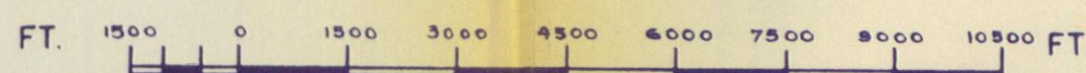
SHEET 115 A-6

LATITUDE 60°15' To 60°30'
LONGITUDE 137°00' To 137°30'

C. Harris Oct 11 1968

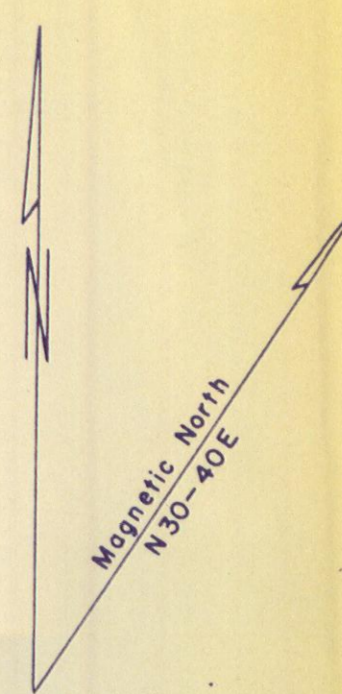
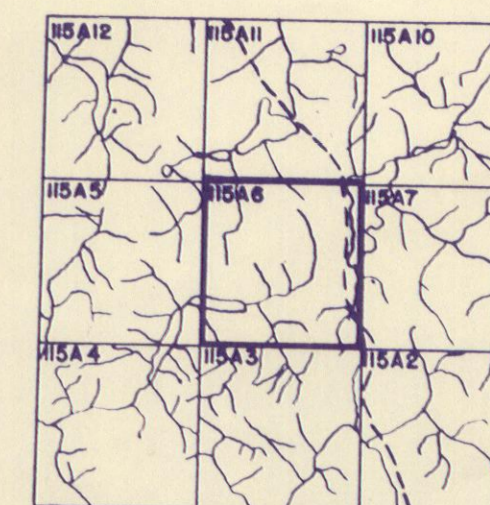
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SCALE: 1/2 MILE TO 1 INCH

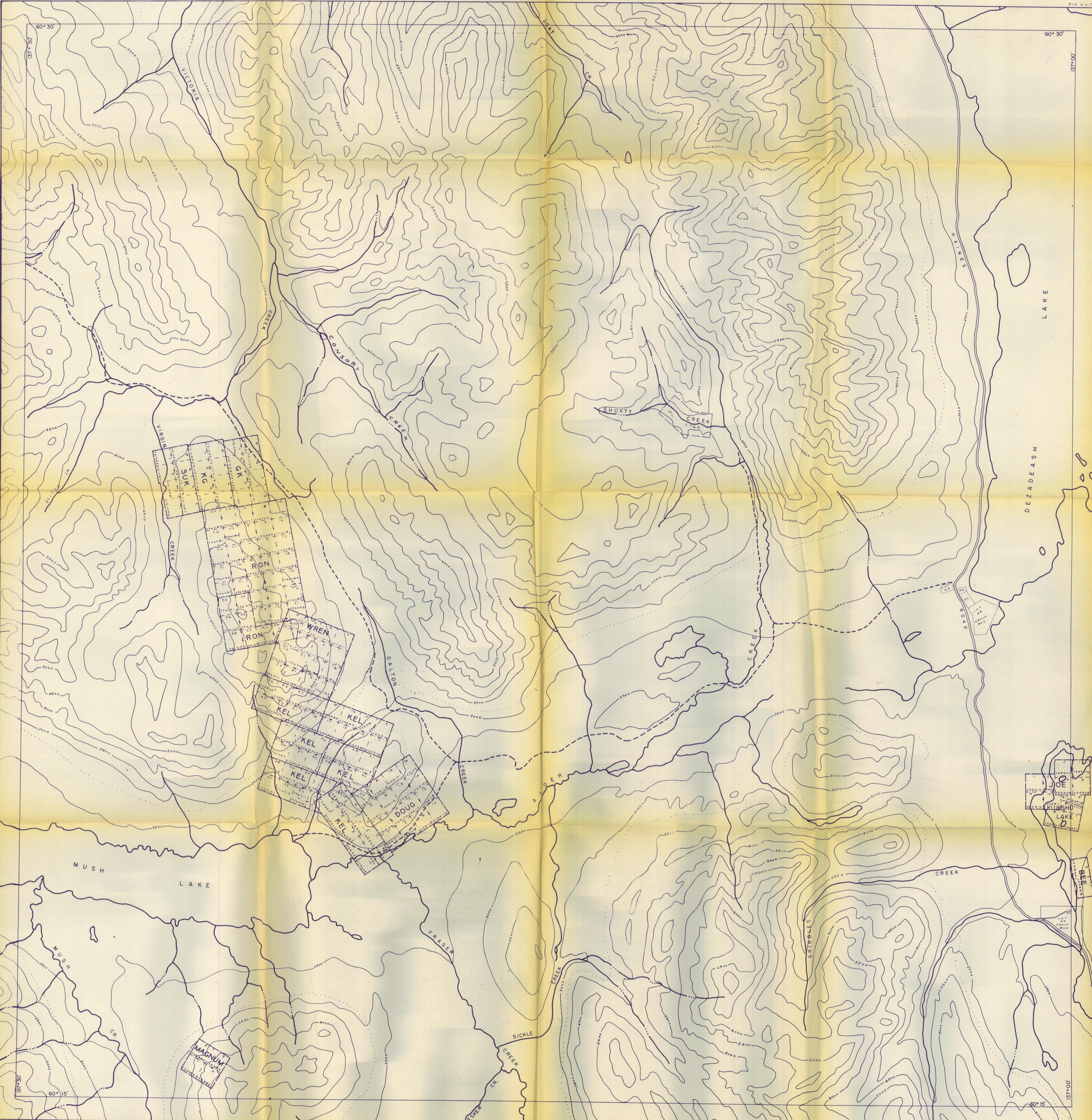


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APPENDIX "A"

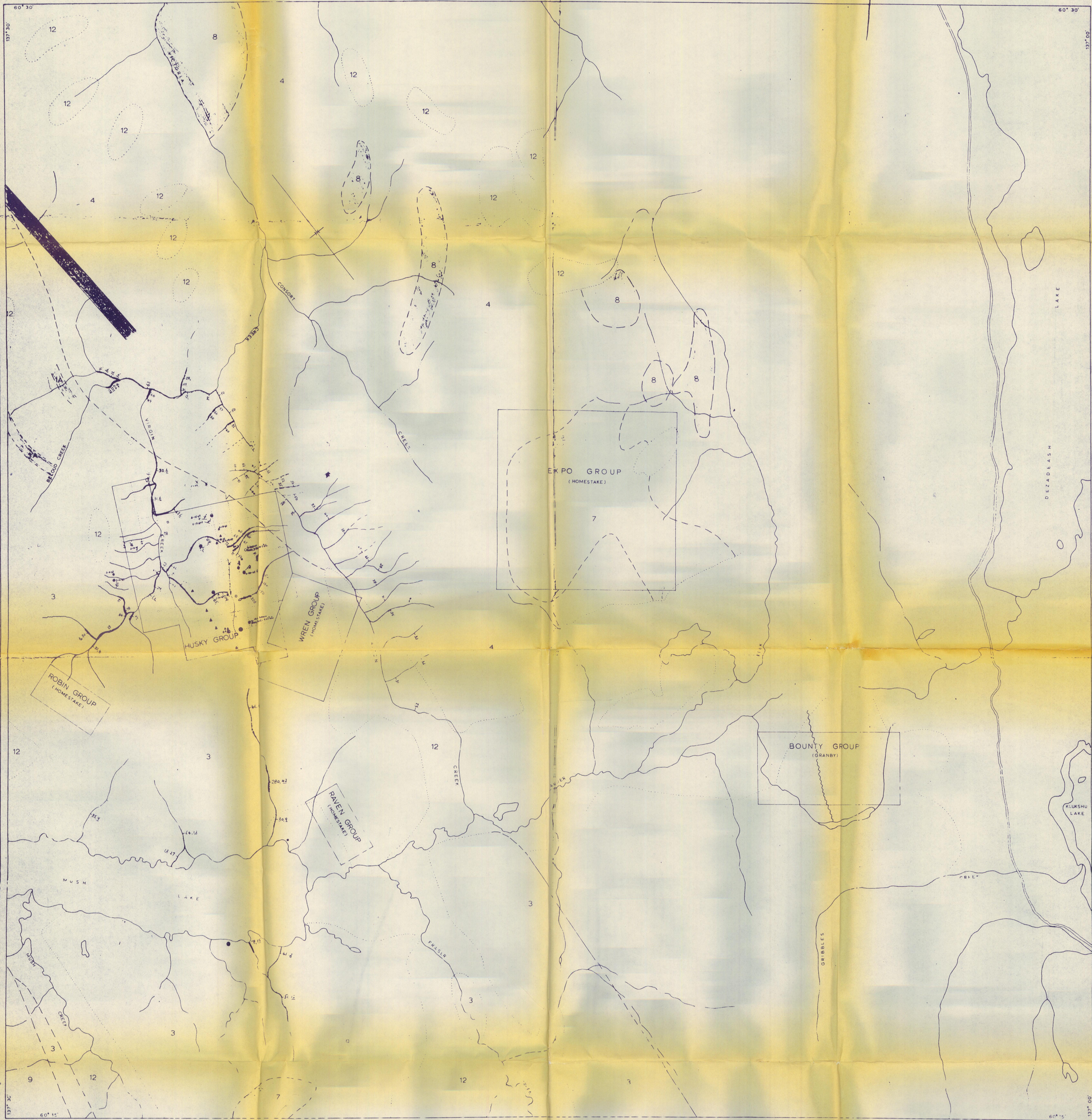


WHITEHORSE 15 July 66
27 Sept. 57



HUSKY SYNDICATE
 DEZADEASH AREA
 YUKON TERRITORY
 COMPOSITE PLAN

Sheet 115 A/6



LEGEND

- | | | | |
|----|--|---|---|
| 12 | PLEISTOCENE
Mainly till and stratified silts | x | Location of a specific point |
| 9 | PALEOCENE
Conglomerate, sandstone, shale | C | Copper mineralisation observed in outcrop |
| 7 | LOWER CRETACEOUS OR LATER
Granite porphyry, quartz porphyry | 1 | Copper mineralisation observed in drift |
| 4 | DEZADEASH GROUP
Conglomerate, shale, sandstone, tuff, argillite, chert | — | Trench |
| 3 | TRIASSIC AND JURASSIC
MUSH LAKE GROUP
Argillite, sandstone, quartzite, volcanic breccia, argillite, slate, limestone | ■ | Local on-camp fly camp |
| 2 | PRECAMBRIAN
TUSKIL GROUP
Crystalline limestone | — | Silt sample location and index |
| | | ■ | Granite |
| | | ■ | Backgrit |
| | | ■ | PPH-H-C-1-1 |
| | | ■ | PPH-H-C-1-2 |

MUSH LAKE

FIGURE 3

NOTES

- S 10-12 - outcrop, conglomerate, mainly very coarse, shaly, in quartz veins
 S 11-12 - outcrop, calcareous
 S 12-13 - outcrop, very coarse granular gabbro
 S 13-14 - float, volcanic with basalt and the upper 1/2 - 1/3
 S 14-15 - outcrop, shale, 1/2 to 1/3 of the contact with conglomerate, with silty shales, exposed about 1/2 mile up the hill from S 10-12
 S 15-16 - outcrop, limestone - 1/2 to 1/3 of the contact with conglomerate, with silty shales, exposed about 1/2 mile up the hill from S 10-12
 S 16-17 - float, volcanic with basalt and the upper 1/2 - 1/3
 S 17-18 - coarse grained basic volcanic of top of the flow, about 1/2 mile
 S 18-19 - coarse grained basic volcanic of top of the flow, about 1/2 mile
 S 20-21 - coarse grained basic volcanic of top of the flow, about 1/2 mile
 S 22-23 - outcrop, volcanic with basalt, tuffaceous, coarse grained, with silty shales, exposed about 1/2 mile up the hill from S 10-12
- Copper mineralisation observed - low level, chlorite, malachite, azurite, in upper part of section 8, upper 1/2.
- Fig. 3 - not contained in the last volume of the series. The reach of the Mush Lake fly camp - massive dispersion of copper in till.

APPENDIX "A"
 115 A/6

Geology by E.D.K. from G.S.C. Map 119A, Dezadeash