Isalit Reports

M. Chand

Preliminary Geological Examination of the Tsalit Mtn. Cu-Ag Prospect
September 1966
W.M. Sharp, P.Eng.

Summary

The Tsalit Mtn. property, some 4 miles NW of Owen Lake, and 18 miles SW of Houston, is reached by approximately 23 miles of gravel road along the Morice-Owen River route.

The general locality, known as the Owen Lake Mining Camp, experienced an active period of exploration-development from 1928 through 1930. The main interest centered on the Owen Lake Mine, where shear and fractures in the diorite mine stock are mineralized predominantly by chalcopyrite-sphalerite or sphalerite-galena. The significant feature of the mineralization was the high Ag content.

The present Tsalit Mtn. group encompasses the old "Grubstake" prospect. The principal showing here consisted of a 9' wide vein carrying chalcopyrite, sphalerite, and galena. Other mineralization noted consisted of disseminations of pyrite, chalcopyrite, and sphalerite within the matrix of a conglomerate.

The present 200-claim group, situated on Tsalit Mtn., is underlain by Hazelton group sedimentary and volcanic rocks. A stock of biotite granite is reportedly exposed within the northerly half of the group; much of the property is assumed to be underlain by granitic rocks at moderate depths.

The current exploratory work is being undertaken in a zone of diorites and/or dioritized andesitic tuffs and breccias, or similarly altered greywackes.

Widespread replacement pyrrhotite certain

chalcopyrite and, locally, dark sphalerite. General exploration to date has partly delimited a minimum 500' by 1200' area within which this type mineralization generally occurs.

Assays of sampling recently carried out show a range of metal contents ranging from 0.10% to 0.25% Cu with corresponding Ag at 0.45 to 1.90 oz./ton. The high Ag:Cu ratio is significant and encouraging. Visibly much higher-grade Cu mineralization occurs within silicified local fracture zones.

The ore potential of the ~~body~~ property will probably depend on the possible occurrence of a sufficient number of higher-grade zones within the general low-grade pyrrhotite-chalcopyrite zone to bring up the generally widespread Ag-Cu-Zn mineralization to a mineable grade.

The writer believes that the local geology is markedly favourable for the occurrence of extensive zones of low to moderate grade Ag-Cu-Zn mineralization. The physical features of the area, the indicated extent of mineralization, ease of access, and proximity to main transportation routes and supply centres would jointly contribute to possible low-cost mining operations. An adequate preliminary exploration program is definitely recommended.

History

...

The Rubstabs group, pre-existing the present Isalit Mtn. claimgroup, was located in 1929. The Min. of Mines report for this year notes that the showings exhibit two different types of mineralization; chalcopyrite and minor molybdenite in distinct shear zones and disseminated chalcopyrite-pyrrhotite in volcanic breccia and quartzite (?). A 45'

sample across the latter reported 0.6 oz/ton Ag with 0.4 % Cu. This mineralization was noted in association with diorite and altered volcanics and sediments...

Geology

Mineralization within the Owen Lake area occurs within volcanic and sedimentary members of the Jurassic Hazelton group. In particular, the more significant occurrences may be generally related to granitic stocks, such as occur north and south of the original Krubstake area and, more locally, to occurrences of dioritic rocks and altered (dioritized) andesitic volcanics and breccias, and interbedded greywackes.

In general, the bedded Hazelton group rocks strike northerly and appear to dip rather flatly eastward or westward.

Current exploration is situated within a general lithologic section comprised of massive diorites and apparently-dioritized andesitic tuffs and breccias, and "greywackes". No distinct "bedding" attitudes could be ascertained.

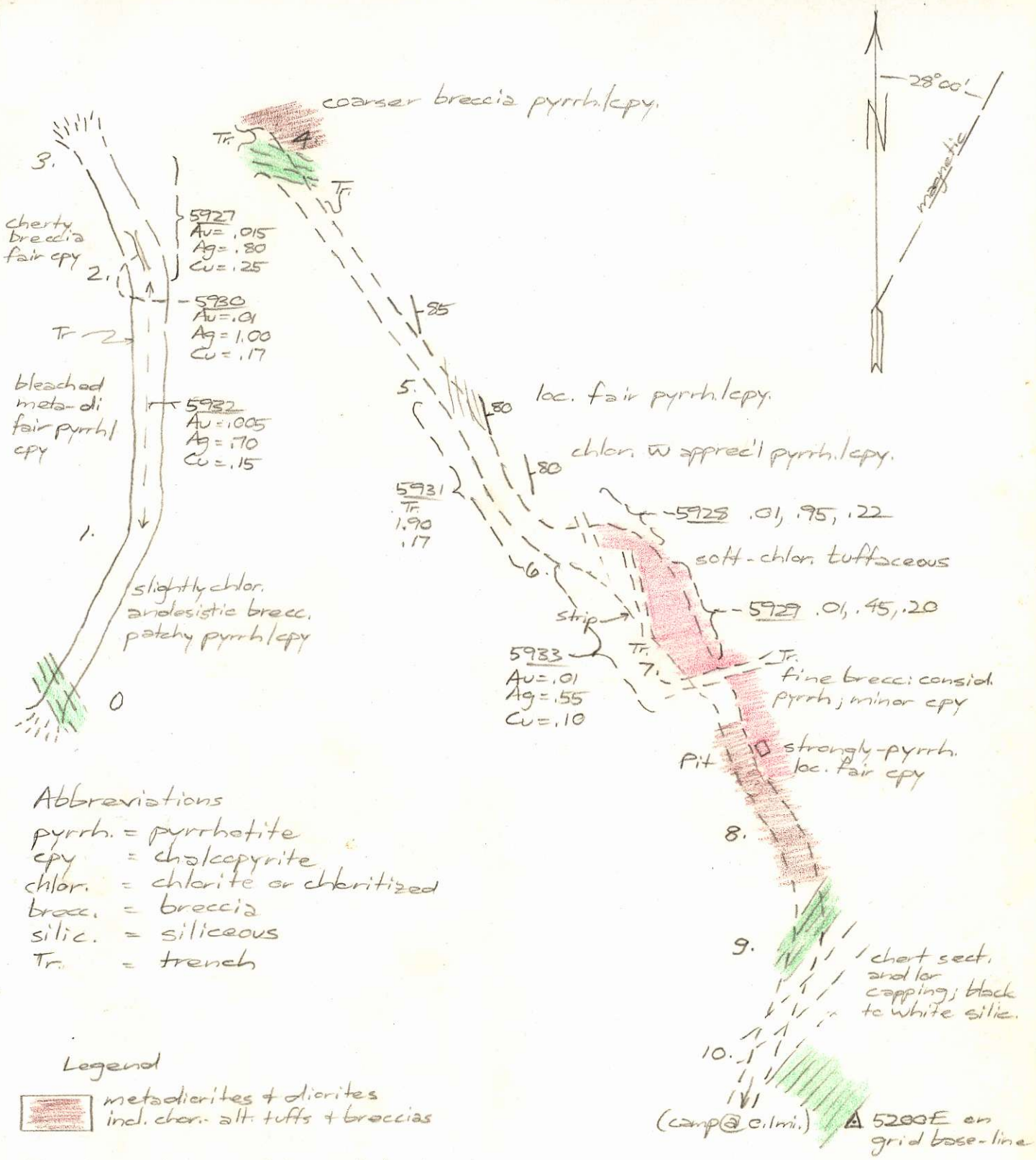
The above rocks are cut by frequent joints and minor fractures - the more conspicuous set having a general NNW trend.

Chloritization forms the most prevalent alteration; locally patchy epidote occurs. A number of paler, bleached-silicified zones were noted. Chalcopyrite mineralization within fractured, siliceous sections visibly exceeds ½ % Cu.

The dominant type of sulphide mineralization consists of fine, to coarsely disseminated pyrrhotite with variable amounts of chalcopyrite. This appears best developed within the dark green soft-chloritic tuffs and breccias.

The presently-indicated minimum extent of

the above pyrrhotite-chalcopyrite mineralization is about 800'x1200'. The zone, with, or without discontinuities, is probably of considerably greater areal extent.



Abbreviations

pyrrh. = pyrrhotite
cpy = chalcopyrite
chlor. = chlorite or chloritized
brecc. = breccia
silic. = siliceous
Tr. = trench

Legend

metadiorites + diorites incl. chlor. alt. tuffs + breccias

silicified argillite and chert

mineralization, chalcopyrite in pyrrhotite, assoc.

80 joints, minor faults, with dip

Assays reported in sequence:
Au oz/ton, Ag oz/ton, Cu in %
all random grabs and/or chip.

Trenching and geology with preliminary samples
Scale: 1" = 100'
mapped by WMS Sept. 8/66
supp. samples: R.E. Anderson, P. Eng.

W.M. Sharp, P.Eng.

Property Examination of Tsalit Mountain
Cu-Mo Prospect (93 L/2)
Normont Copper Limited (N.P.L.)
Vancouver, B.C. November 1966
D.A. Silversides

Location and Access

The claim group of Normont Copper Ltd. is situated on Tsalit Mtn. approximately 18 miles SW of Houston, B.C. Access is provided by four miles of road suited for 4-wheel-drive vehicles joining the Houston-Owen Lake logging road.

Property and Ownership

Normont's claims enclose an area of approx. sixteen square miles over the flanks and summit of Tsalit Mtn. Normont Copper Ltd. was incorporated during the summer of 1966. The principal officers of Normont are D. Small, President, and W. Yorke-Hardy, Vice-President.

History

Cu-Mo mineralization on Tsalit Mtn. was discovered as early as 1929. Descriptions are given under the name of the Grubstake Group in relevant Annual Reports to the Min. of Mines of B.C. and GSC publications.

Key claims covering the Grubstake group were held by E. Westgarde during the past few years. In the summer of 1966, these were incorporated with additional claims to form Normont Copper Ltd.

During August, September, and October 1966, Normont conducted an exploration program of line-cutting, geologic mapping, access road construction, geochemical soil

sampling for Cu, and stripping, blasting, and surface samples. This work was mainly focused on the original Grubstake Cu mineralization located on the south slope of Tsalit Mtn. The work was carried out under contract by Anco Explorations, under the direction of R. Anderson.

Amax's knowledge of the Tsalit Mtn. area dates to 1964 when anomalous Mo values were found in silts from streams draining the north flanks of the mountain. In 1965, geological mapping and soil sampling was carried out by M. Shepherd over a small granite plug on the north slope of the mtn. Results indicated an anomalous zone 3,000' by 4000' averaging 26 ppm Mo in soils. The granite was found to contain minor flakes of molybdenite, specular hematite and pyrite. This mineralization lies approx. 1½ miles N of the original Grubstake Cu mineralization.

During the latter part of Sept. 1966, the Cu mineralization on the Grubstake occurrence was briefly examined by R. A. Barber and J. F. Allan of Amax. This examination indicated that low-grade Cu mineralization was spread over a fairly large area. A more detailed geologic examination, coupled with a Magnetometer survey, was felt to be warranted.

The writer's examination was conducted October 14-26, 1966. During this period, additional molybdenite mineralization was discovered by trenching crews on the summit of Tsalit Mtn.

Scope of the Examination

A Magnetometer Survey was carried out over the grid lines cut by Normont personnel. The grid covers the Grubstake and Summit mineralization. Snow conditions hampered the visual examination of outcrops and mineralization. Therefore, the writer's geological knowledge of the property has been obtained largely from the following references:

a) A. H. Lang (1929) Owen Lake Mining Camp, B.C.; Summary Report, Part A, GSC
b) Annual Report to the Min. of Mines of B.C. (1929); p. C175
c) Shepherd, M. Tsalit Mtn. - Area #10; Central B.C. 1964-65 Prospecting Project, Amax Exploration Inc. Report (in process of writing)
d) Sharp, W. M., P.Eng. Preliminary Geological Examination of the Tsalit Mtn. Cu-Ag Prospect. This is a consultant's prelim. report submitted to the principal officers of Normont Copper Ltd.
e) Anderson, R. Geology and Sample Map of the Grubstake and Summit occurrences

Geology

Regional Setting

Normont Copper Ltd.'s claim group lies in an area popularly known as the Owen Lake Mining Camp. The area is characterized by a number of small granite and diorite stocks cutting Upper Cretaceous sedimentary and volcanic rocks. The dominant regional trend of the sediments and volcanics is north-south with shallow dips to east and west. Tertiary volcanics lie 10 miles SE of the property.

Other mineral occurrences in the area consist of Cu-Pb-Zn-Ag veins immediately NE of Owen Lake. The more important of these veins are being explored by Nadina Mines Ltd.

Property Geology

Isalit Mtn. is largely underlain by chert, greywacke, and andesite tuffs, and breccias. The few known attitudes indicate the various units strike northerly and have shallow dips to the east and west. Small stocks and dykes of coarse-grained granite, rhyolite, and possibly gabbro cut the volcanic and sedimentary series. The exact nature of the emplacement of the gabbro is in doubt. It may in fact be a fairly flat-lying volcanic flow.

Summary of Occurences

Relatively detailed geologic knowledge of the Normant property is limited to areas covering three known mineral occurrences.

i. Grubstake occurrence

Rock types associated with the Grubstake occurrence have been mapped by R. Anderson. These include chert, argillites, greywacke, rhyolite dykes, gabbro, and breccia. The most significant rock type appears to be the breccia as portions of this carry the chalcopyrite-pyrrhotite mineralization.

The writer spent one afternoon with R. Anderson in a brief examination of the pits exposing the Grubstake mineralization. Snow commencing the following day prevented a chain and compass survey to tie in the mineralized zones. The brief examination indicated that pyrrhotite-chalcopyrite mineralization occurs primarily in a fractured

volcanic fragmental. The mineralization is distributed as a series of zones, separated by unmineralized chert, breccia and fine-grained gabbro. The mineralized zones appear to be contained within an area 1200' by 500'.

The writer's visual estimation of the grade is that the Cu values are low to moderate, in the order of 0.1 to 0.5 %. Seven samples obtained over an area 600' by 500' by W. Sharp gave the following assay results:

Cu %	Ag oz.	Au oz.
0.25	0.80	0.015
0.17	1.00	0.01
0.15	0.70	0.005
0.17	1.90	trace
0.22	0.95	0.01
0.20	0.45	0.01
0.10	0.55	0.01

Normart has taken a large number of samples over the Grubstake area of interest. Results vary from trace amounts to .18% Cu.

In summary the Grubstake occurrences consist of a series of chalcopyrite-pyrrhotite within an area 1200' by 500'. It is estimated that at best, one-half of this area is mineralized. Cu values are low.

ii Summit occurrence

Molybdenite mineralization is exposed in pits in two localities near the summit of Gralit Mtn. At site A, the mineralization consists of trace quantities of molybdenite along fractures in a dark, fine-grained rock similar to the gabbro exposed in the vicinity of the Grubstake mineralization. Pyrrhotite is present in minor amounts.

Several pits have been sunk in bedrock at site B within an area 100' by 200'. Only one good mineralized exposure, approx. 4' by 4' was

observed. The rest of the pits contain nil to trace quantities of MoS_2. The best mineralization is in brecciated black rocks similar to the gabbro of the Isubstate mineralization. Medium to coarse-grained flakes of molybdenite, associated with pyrrhotite and actinolite occupy the fractures.

One sample from site A and two grab samples from site B were taken for assay:

15227 Site A - line 80, 600N. Trace amounts of MoS_2 in fractures in gabbro(?) .05% MoS_2

15228 Site B - line 76, 460N - brecciated gabbro(?) with MoS_2 and pyrrhotite in fractures .005

15229 Site B - line 76, 460N - brecciated gabbro(?) with MoS_2 and pyrrhotite in fractures. This sample represents the best MoS_2 mineralization observed .74

iii North Slope occurrence

The North Slope occurrence consists of molybdenite associated with a coarse-grained granite stock. This occurrence was examined by N. Shepherd in 1965. Fig. 5 and 6 and the following section give his results:

"Reconnaissance geochemical sampling of a stream draining the North Slope of Tsalit Mtn. in 1964 indicated anomalous amounts of Mo in the water and silt. Detailed soil sampling conducted over the area in 1965 outlined a zone approx. 3000' by 4000' in size averaging 26 ppm Mo.

"The anomalous area is underlain by a fresh, massive, medium grained biotite granite (10% outcrop) which contains minor flakes of molybdenite, specularite, and pyrite. A few thin quartz feldspar porphyry felsite and

lamprophyre dykes cut the granite which is intrusive into rhyolitic and dacitic volcanics.

"Four rock chip samples from the pyritic volcanics near the granite contact averaged 291 ppm Mo and 265 ppm Cu, and seven rock chip samples from granite outcrops west of Isolit Creek averaged 140 ppm Mo and 60 ppm Cu. Considerably lower Mo values were obtained in the granite E of the creek where soils gave negative results."

Magnetometer Survey

The Magnetometer Survey was completed over Normart's grid area using a McPhar M-500 instrument. The instrument was calibrated to zero scale reading at station 200S line 4800. Bedrock at this point is unmineralized chert. Readings were taken every 100' along all grid lines, and in the area of the Grubstake occurrence at 50' intervals.

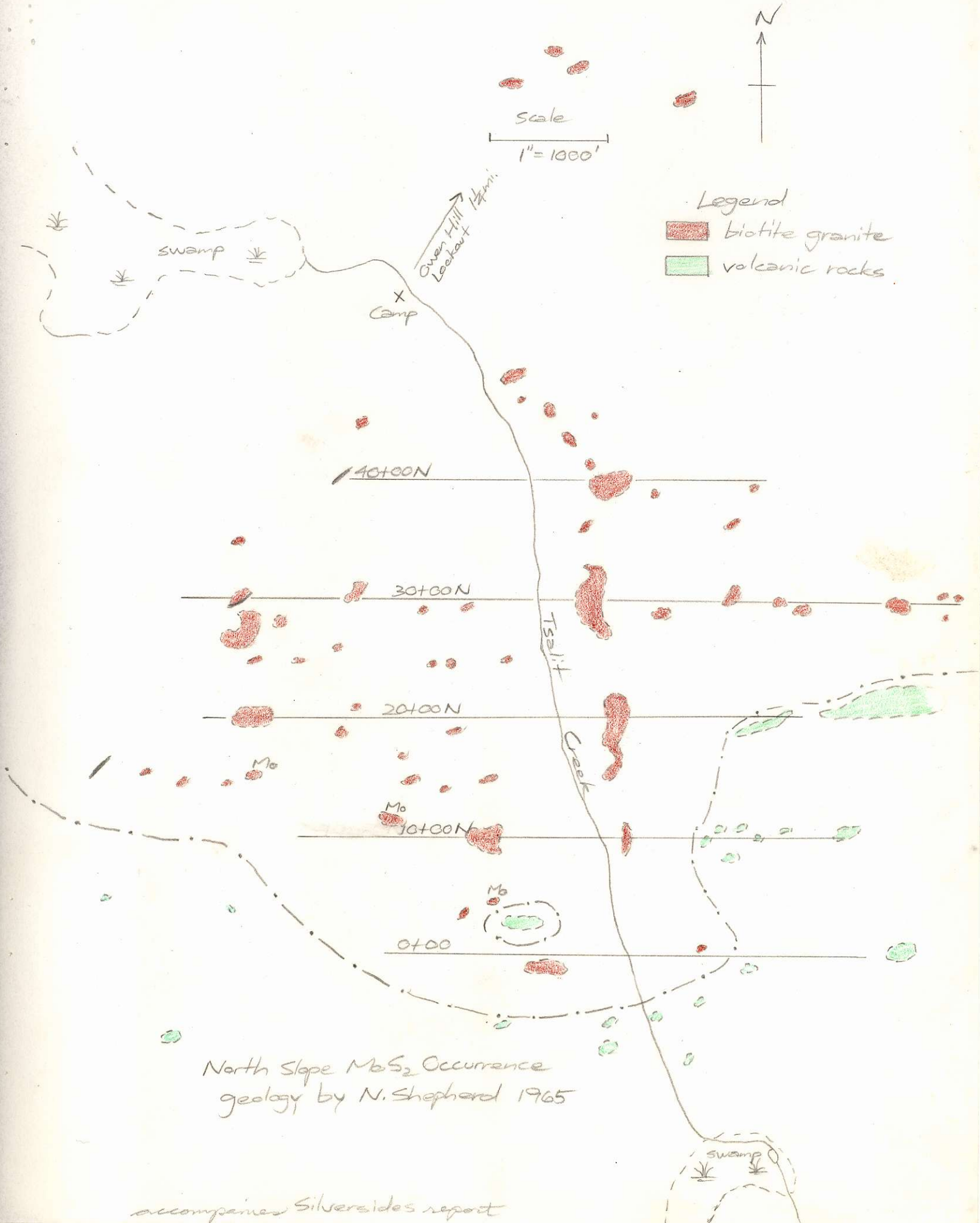
The purpose of the survey was to detect pyrrhotite (and Cu?) concetrations, principally in the area of interest about the Grubstake mineralization. The results of the survey are shown in Fig. 6. Interpretations are as follows:

i. Values of 400 gammas are felt to indicate a probable concentration of pyrrhotite. A series of north-south trending zones containing values of this magnitude are present in the grid area.

ii The Grubstake mineralization is defined as as an area of interest approx. 1400' in diameter. This area is characterized by a series of north-sound trending magnetometer anomalies. The character of the anomalies fits the observed character of the mineralization; i.e. a series of mineralized zones

are indicated. These zones are most likely steeply-dipping as the magnetometer values vary from background to highly anomalous over short, lateral distances.

iii. Sites A and B of the Summit molybdenite mineralization lie within the same north south trending anomaly.



North Slope MoS_2 Occurrence
geology by N. Shepherd 1965

accompanies Silversides report

TSALIT MTN.
general geology and mineral occurrences
Scale: 1 in. = ½ mile

accompanies Silvercides report

Glacial Striae

Ts	- 1	091°	~~8~~ 152
OL	- 296	106	✓
	- 313	113	✓
	- 321	178	
	- 134	116	
	- 137	128	
	- 171	105	✓
	- 212	117	✓

Bed

OL 288

290

326

330

129

146