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PRELIMINARY REPORT
including
WORK PROPOSALS ON TATS-ALSEK PROSPECTS
Tats Lake Area, B.C.
NTS 114P/12

J.J. McDougall February, 1982

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TABLE OF CONTENTS

FIGURES, PHOTOS AND APPENDIX

APPENDIX I

INTRODUCTION

The Tats and Alsek properties are relatively untested copper prospects located immediately south of, and in the same environment as, the Windy-Craggy massive sulphide prospect described elsewhere by the writer.

This report is a compilation of work done on the prospect(s) to date and includes proposals for further work.

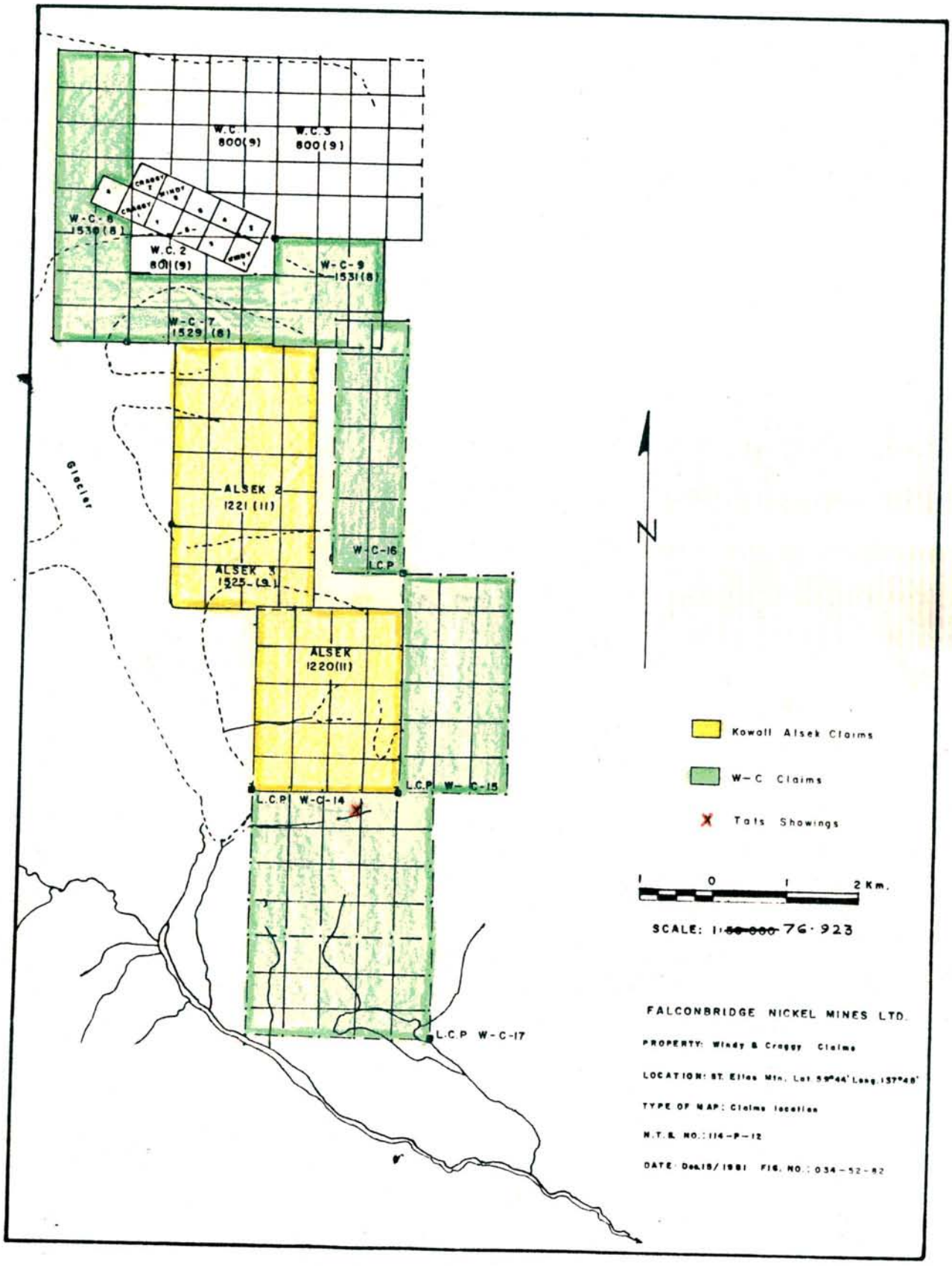
PROPERTY

The property consists of the W.C. 7, 8*, 9, 14, 15, 16, and 17 located claims (100 units) held by FNML and the Alsek, Alsek #2 and Alsek #3 located claims (48 units) held by Charles Kowall (Fig 52/82). All W.C. Claims, except #17, have assessment work filed (awaiting approval) placing them in good standing until at least 1985. W.C. #17 (15 units) was recorded. The Alsek Claims are in good standing until September, 1982.

LOCATION AND ACCESS

The Claims described form a continuous block stretching from Tats Lake in the south to the Windy-Craggy property in the north, a distance of about 6 miles. Tats Lake, the base camp (elev 2,700ft) for the Windy-Craggy operation, is 40 miles west of the Haines Cutoff Highway in northwest B.C. and 11 miles NNW of the junction of the Alsek and Tatshenshini Rivers. It is serviced by float aircraft from Whitehorse, Y.T., about 120 miles to the northeast. The main showings (elev 4,000ft+) are 1 3/4 miles due north of Tats Lake and accessible by hiking or helicopter, (see photo T1/82).

* W.C. 8 may not be included, due to possible amendments


W.C. 800(9)
W.C.3 800(9)
CRAGGY 1
WINDY 2
CRAGGY 3
4
5
6
WINDY 7
W-C-8 1530(8)
W.C.2 801(9)
W-C-9 1531(8)
W-C-7 1529 (8)
ALSEK 2 1221 (11)
W-C-16 L.C.P
ALSEK 3 1525-(9)
ALSEK 1220(11)
L.C.P W-C-15
L.C.P W-C-14
L.C.P W-C-17
Glacier
N
Kowall Alsek Claims
W-C Claims
Tats Showings
1 0 1 2 Km.
SCALE: 1:50,000 76·923
FALCONBRIDGE NICKEL MINES LTD.
PROPERTY: Windy & Craggy Claims
LOCATION: St. Elias Mtn. Lat. 59°44' Long. 137°48'
TYPE OF MAP: Claims location
N.T.S. NO.: 114-P-12
DATE: Dec.15/1981 FIG. NO.: 034-52-82

HISTORY AND DEVELOPMENT

The Tats prospect was located by S. Bridcut and the writer in 1958 while searching for the source of copper-rich float found in and below Tats Glacier to the west. The four "Tats" claims were staked at the time and two short packsack holes were later drilled, largely for assessment purposes, on one of several mineralized zones discovered.

Shortly after the staking of the Tats, the main Windy-Craggy deposit was discovered and most work was concentrated there. The Tats Claims were allowed to lapse but the main showing was restaked in 1981 as the W.C. #4 mineral claim, which was abandoned shortly after and restaked as the W.C. #14.

Late in 1980, Charles Kowall located the "Alsek" mineral claim to cover the Tats deposit as described in our earlier assessment reports which he copied from government files. However his southern boundary appeared, when checked by transit, to be at least 1,000 feet short of covering the main showings, thus allowing our W.C. 4 staking. The Alsek claim did, however, cover the northern extension of a prominent pyritic alteration zone in which the known deposits occur. Considerable mineralized float, whose source is yet unknown, occurs in the light but extensive glacial debris to the immediate north. Kowall's more northerly claims, the Alsek #2 and #3, cover several smaller copper deposits earlier noted, plus a new one as shown on Kowall's Map #14/81 (pocket).

Except for the two packsack drill holes and limited sampling, no work has been done on the W.C. or Alsek Claim Groups in the area. Kowall has submitted his prospecting map for assessment purposes.

PHOTO T1/82 TATS DEPOSIT

X approx. lctn. Windy-Craggy Deposit
approx. lctn. Swiss Al Mag anomaly

Scale: 1:70,000 (1"=5800ft)
corrected

GEOLOGY

The General Geology of the Tatshenshini Map area has never been published in any detail greater than that done by the writer in early Recce work. Assessment reports filed by Swiss Aluminum in 1975 and 1980 describe bedrock geology 6 miles to the northeast where float source is a problem also. Portions of the later report are enclosed in the appendix, as some of the geological units involved are the same. Map W.C. 9/81 enclosed shows the Tats Deposit plotted on a preliminary 1979 G.S.C. Map. The W.C. (Windy-Craggy) is also plotted showing the relation of it and the Tats to the pillow basalt complex.

The age of the volcanic complex is unknown due to lack of identifiable fossils in sedimentary lenses included, but is believed by the G.S.C. to be late Paleozoic, possibly Permian. The writer has always considered the complex to be Triassic, based on no evidence other than it's appearance. Thevolcanics are believed to be of local (restricted) derivation rather than being a remnant of a more widespread mass. Three areas of similar pillow basalts are mapped, but, based on the writer's observations, these can not be correlated with any certainty as yet. The Tats volcanics contain far more interstitial sulphides, with most pyrite and all pyrrhotite involved being anomalous in cobalt, unlike the other occurrences shown.

The volcanic complex has not been mapped in detail but appears to consist of several thousand feet of clastic or non-clastic rocks ranging from andesites to basalts, although float which is more rhyolitic in appearance has been found. The widespread basalts or andeso-basalts are often pillowed and form less continuous units than do the andesites, which appear to sills as well as flows.

Besides the pillows, flow breccias are common. Sedimentary units are closely related to or interbedded with the volcanics and include a predominance of carbonaceous or calcareous shales and argillites. Limestone is occassionally present as are quartzitic members.

GEOLOGY (contd)

Steep faults found the volcanics in some areas and a general observation has been that the whole volcanic complex is fault-bounded, but mapping has been insufficient to prove this. In the W.C. sulphide area, most units trend northwesterly and dip steeply to the east, but enough opposing attitudes have been noticed to discount this as being a generality. Bounding sediments reflect folding, which is common, much better than do the volcanic rocks.

Regionally most rocks appear to have undergone metamorphism to at least lower Greenschist grade, but in the vicinity of intrusives hornfelsic metasediments, etc. are noted.

LOCAL GEOLOGY

Except for a few local observations by the writer (1958), a prospecting map by Charles Kowall (#14-81-pocket) and a perusal by the G.S.C., no geology has been attempted in the vicinity of the Tats Showing. The rocks involved are believed to be meta sediments, meta andesites and meta basalts. Pillow lavas are undoubtedly present but not prominent in the vicinity of the deposits.

As shown on most maps, an east-west trending fault forms the south boundary of the pillow lava complex north of Tats Lake, while calcareous and/or carbonaceous sediments bound it to the east and west. Kowall has mapped a northerly trending diorite body intruding (?) the complex to the west. This intrusive may be responsible for the widespread alteration zone developed surrounding the mineral zone in question (photo 9/81). Alteration includes pyritization, silicification and possible hornfelsic development. The rocks are highly folded (drag in part) and cut by numerous dykes and sills. Mapping will probably show considerable faulting, much of it paralleling the northeasterly trending creek over the known deposits.

GEOLOGY (contd)

Further reference to local geological features, including mineralization, is included in the following section, reproduced from the initial 1958 description.

DESCRIPTION OF PROPERTY

The following description (Fig 41/82) from the writer's 1958 Alsek Prospecting Report is the only one available.

The main deposit would be of interest only if a much larger potential were proven elsewhere. It could easily be Packsack-drilled and would be directly accessible by a road from Tats Lake. Four claims were staked to cover the showing pending results in other more promising copper-rich sections to the north.

#3: - This occurrence consists of small amounts of float composed of soft deep green highly weathered copper minerals of which only traces of chalcopyrite remain identifiable. Secondary chalcocite and copper carbonates are evident. Silver assays of 22 ounces were obtained from this material which was found on the top of the 5200 foot(?) mountain immediately north of Tats Lake. The rock is so soft that it could not have been travelled far. It is believed related to the basic sills and dykes which cut the thin-bedded-calcareous sediments over widespread well exposed areas. The amount present does not suggest a deposit of interest, although such should be looked for in similar rock along strike.

2. TATS GROUP

Under prevailing conditions it was impossible to do the required assessment work for the four Tats claims on the mineral showing itself so two wildcat holes were drilled to sample unmineralized volcanic rock some distance away. Prospecting on the hillside above this area of widespread(?) glacial debris failed to uncover anything more than a few sulphide blebs. One large float sample of chalcopyrite in greenstone assayed 17.70 in gold while a sample of the common pyrrhotite-chalcopyrite float assayed 0.16% cobalt. The main deposit itself has not been tested for cobalt.

The Tats Group environment is not unlike that of the Crazy-Windy along strike to the north and occupies a similar position with respect to the Tats Greenstone. The cap-rock theory used in conjunction with the latter would also conveniently explain the sudden termination of the mineralized zone along strike on the hillside above. Native copper was found associated with sulphate springs in this supposed cap rock several hundred feet north of the main showing and the possibility of a Crazy-Windy type sulphide body underneath exists. For this reason the Tats Group claims should be kept up until the value of the Crazy-Windy is known.

FIG 41/82

1958 REPORT

Mineralization consists of near-massive sulphides including pyrite, pyrrhotite, magnetite, and chalcopyrite in order of their abundance. Chip samples across the widest and best exposed 40' sections returned assay results as follows:

(a) 18' (south) - Copper 0.8%

(b) 22' (north) - Copper 2.3%

Average - 40' - 1.62% Copper, 0.3 oz. silver, 0.01 oz.gold

A 12 ft. width of copper-stained magnetite, 100' east of this section, assayed 1.55% copper, 0.2 oz silver and 0.02 oz gold.

The pyritized country rock was not sampled nor was a poorly exposed chalcopyrite-bearing zone of unknown width along the northern edge of a large diorite sill a few hundred feet downhill to the south of the main showing.

Several tons of high grade (2% Cu) pyrrhotite float are present on the gravel slopes several hundred feet east of the main deposit. Some of this well mineralized material occurs at an elevation greater than the main zone, indicating the possibility of a third paralleling zone to the northeast. Limited prospecting in this section failed to show such material in place and it thus could also have originated higher up the main valley now largely ice and gravel filled. Prospecting in the Complex along general strike for a mile to the north and west turned up only a 1' wide massive chalcopyrite vein (#6). Some secondary native copper was found in an extensive pyritic zone containing sulphate springs resembling those of the Cataga Gossans.

The deposit occurs as an irregular replacement in a large, locally folded intensely pyritized zone of highly altered volcanics and minor meta-sediments. The red to brown weathering zone is cut by numerous sills or dykes of diorite(?), rhyolite and porphyritic greenstone. With the exception of a hard, smooth, maroon-weathering central band or "core" of near massive sulphides, the mineralized section is not clearly defined. As exposed it is about 400' long and varies between 15 and 40 feet in width. An additional several hundred foot extension is indicated along strike to the southeast under extensive gravel side moraines. This extension probably terminates against a large unexposed but strongly indicated east-west fault which the main creek now follows; while to the northwest the mineralized band terminates abruptly in the vicinity of a small talus slide and does not reappear along strike beyond. Cross-faulting or severe folding are indicated. The dip of the deposit is generally vertical although rocks a short distance south have a moderate northerly dip. The mineralized section is bounded to the north in part by a slightly mineralized irregular granular greenstone sill at least 20' in width and in part by a white, 10' wide rhyolite sill which parallels the deposit and which is also weakly mineralized. The bounding rocks on the south are massive, highly altered and pyritic volcanics which are probably tuffaceous in part. Sills are evident in this section also.

ASSAYS AND RESERVES

The Tats deposit has not been sampled since 1958, except for a selected grab (#5) shown on Kowall's map (pocket) and those assays included in Fig 41/82 are the only ones available except for float found a considerable distance uphill.

In 1960 two short packsack holes were drilled for assessment purposes. Insufficient time was available for site preparation near the deposit which was chip sampled in 1958, and, as an alternative, the holes were drilled on a secondary target where water was available. These holes, totalling 69 feet (site not visited by the writer) were from a "safe" location, near a cupriferous magnetite lense north-east of the main showing. They were drilled "at a high angle (50°±) across the magnetite zone" from locations 50 feet apart. As per logs attached (Tats #1 and #2/60) copper assays ranged from 0.05% to 2.35%. Cobalt was not assayed for.

Results of this assessment drilling are of little significance except to show that the sulphides are definately cupriferous and that pyrite is more abundant than pyrrhotite in this location, present largely as bands in the volcanics.

The "Alsek" Claim Groups were prospected by Mr. Kowall in 1981 and results, including generalized geology and specimen sample locations, were plotted on Map 14/81.

Except for select specimens of copper mineralization (#5) from the main Tats Showing (10%Cu), and that from shears in the andesites at Locality #10, most samples represent float found up hill and beyond the known Tats deposit (see Table Plot on Map 14/81). Only a few of the float specimens show any similarity to that discovered in place on the Tats. Thus, the "source" is considered to be local but drift covered.

Samples taken in 1981 were assayed for copper and cobalt with occassional checks for gold and silver. The massive sulphides appear to have a cobalt and pm content similar to that of the Windy Craggy. Float specimens(1958), however, contained up to 22oz silver. One specimen, #9(b) contained visible galena and sphalerite, it may be related to the more silicic rocks noted.

PROPERTY ~~TATS COPPER (Alsek)~~

HOLE NUMBER TATS #1 & TATS 2

SHEET NUMBER 1

SECTION FROM ..... TO .....

DIAMOND DRILL RECORD

LOCATION: LAT. Two steep holes approx. 50' apart in small
DEP. creek below and north of main O.C.

ELEVATION OF COLLAR 4500 approx. Not surveyed.

DATUM For assessment work purposes only as

DIRECTION AT START: BEARING rolling rock discouraged set-up in
DIP main mineralized zone.

STARTED August 5th, 1960

COMPLETED August 7th, 1960

ULTIMATE DEPTH 20 Ft. and 32 Ft (core)

PROPOSED DEPTH plus 17 Ft sludge

DEPTH FEET	FORMATION	Sample FROM	Sample TO	WIDTH OF SAMPLE Ft.	Gold	Ag	Cu%
#1							
0 - 7	10% banded magnetite - pyrite min @ 45° to core in f.g. chloritic andeso-basalt(?)V2??	4523		7.0	Tr	0.1	2.35
7 - 20	do do increasing pyrite	4524		13.0	Tr	0.1	0.10
#2							
0 - 15	As #4523 - 20% pyrite	4525		15.0	Tr	0.1	1.1
15 - 32	" " " core (recovery 60%)	4532		17.0	Tr	Tr	0.05
32 - 49	" " " sludge	4533		17.0	Tr	Tr	1.0
	Holes drilled north-east of main showing as falling rock prevented safe set-ups nearer.						
	J. A. R. #. 3.						

N.M.P. - FORM A

CONCLUSIONS

The Tats deposit contains some in-place mineralization resembling that of the Windy-Craggy but contained within a large dyke-infested pyritic alteration aureole not present at the latter. Considerable mineralized float is found within this zone, particularly on the Alsek M.C.. The float is believed to be locally derived with a source beneath the glacial ice and debris within one kilometer in a northeast direction of the known deposits. Diversity of float types suggests the presence of more than one deposit, e.g. galena-sphalerite which may be related to possible "rhyolites", as well as the pyrrhotite-rich material which shows more affinity to the andesite-basalt hosts.

Geology appears more complex than at Windy-Craggy due to metamorphism and swarms of dykes and sills related to a nearby intrusive.

RECOMMENDATIONS

The Tats-Alsek prospects, although small as presently known, should be further tested while work is underway on the nearby Windy-Craggy deposits whose production it could supplement if a massive sulphide deposit of sufficient size and grade exists.

WORK PROPOSAL

The following proposal is divided into 2 parts:

(A) - Test of known Tats mineralization

(B) - Location of float source area

TESTING OF TATS DEPOSIT (A)

(1) Mapping

Unfortunately, adequate ground control for mapping purposes does not exist and the work base consists only of airphotographs plus a 1:250,000 scale topographic map, (NTS 114P). With the initiation of any program, adequate maps

TESTING OF TATS DEPOSIT (A) (contd)

are necessary. The published 1:250,000 topo map (portion enclosed) is inadequate and 1:50,000 mapping has not been done. A preliminary base map can be prepared from existing photography on a scale of 1:2,500, as was done at Windy-Craggy. This can later be supplemented by ground work. Helicopter-recorded altitudes can be used for approximate vertical control...that of the base of Tats Glacier is known and that of the Main (and identifiable) deposit is recorded at 4,500 ft.

(2) Drilling

Subject to results of a geological survey, it would appear that known sulphide attitudes are steep and strike north or northwesterly as does the Windy-Craggy. However the zone (possibly structurally controlled) within which they occur appears to trend northeasterly, paralleling local drainage. Complications caused by folding and faulting are obvious, and drilling directed in two directions may ultimately be required to gain an understanding of the deposit. With this in mind, the following drilling is suggested, as sketched on photo T2/82.

#1 HOLE - From a suitable location on or east of a bluff near the north boundary of W.C. #14 M.C. (this boundary was run in by transit), a hole would be directed southeasterly designed to intersect the exposed pyrrhotite zone at depth.

#2 HOLE - From the same location as #1, this hole would be directed more easterly to intersect the northeasterly trending structure and cupriferous magnetite zone. Preliminary mapping would have to confirm that there was a continuous drill target striking northeasterly, an anomalous direction, however.

Helicopter access to this location would be relatively easy with one site preparation required. Bedrock is at or near surface in this locality. Other localities might prove to be better or Superior for drill target intersection, but sites are far more unsuitable due to roughness of terrain. Ample drilling water would be available for any site.

TESTING OF TATS DEPOSIT (A) (contd)

The length of -45° holes required to intersect both the sulphide and magnetite zones would be about 1,000 feet, but this is subject to correction following ground measurement rather than photo plotting.

FLOAT SOURCE EXPLORATION (B)

Prospecting has failed to expand on the source of the float found around the cirque, which has it's beginning about 1,000 feet northeast of, and above, the Tats showings. A few small "gobs" of mineralization have been found in the rocks surrounding the cirque, but these are not the source of the numerous mineralized boulders evident. There seems little likelihood that the float source is the Windy-Craggy deposit itself, some miles to the north, as two major crosscutting valleys and high mountains intervene and similar float is not evident in or on them. Other sources could be up hill to the east or to the west, but rock exposures are good in these directions and no sign of extensive mineralization exists.

Within the gravel and ice-filled cirque to the northeast, there are anomalous concentrations of sulphate-rich water similar to that found at Windy-Craggy, and cuprite-native copper has also been identified. In addition, the southern portion of the cirque is largely enclosed within the pyritic alteration halo, although this dies out with elevation increase towards the headwaters. Evidence points overwhelmingly to the cirque, or the lower gravel covered lip of it, being the source of most of the float.

Ground geophysics (mag and EM) would be the cheapest search method. However were DIGHEM in the area, despite the ruggedness of the terrain 5 or 6 lines could be flown

FLOAT SOURCE EXPLORATION (B) (contd)

as done at Windy-Craggy in 1981. Results could then be followed up more efficiently on the ground. The suggested traverse area is sketched on photo T1/82, an enlargement of a portion of an airphoto.

COSTS

Costs of geologically mapping the local Tats deposit area would be approximately $10,000. If in the area, DIGHEM might fly the zone for $5,000. All-inclusive drilling costs would appraoch $100/ft. if drills, such as those currently at Windy-Craggy, were not available. In conjunction with Windy-Craggy, costs might be halved.

J.J. McDougall

APPENDIX I

FIG 52/82

Description of geology

East Arm Glacier

(from Swiss Aluminum Assessment Report, August, 1980)

3. GEOLOGICAL SURVEY, by G. Della Valle

3.1 Introduction

Detailed geological mapping was conducted between 2nd and 15th July 1980, on both sides of the East Arm Glacier, in the area surrounding a large magnetic anomaly.

This magnetic anomaly was interpreted to be related to a large mineralized body underneath the ice, possibly controlled by a volcanic-detritic rock type contact.

The purpose of this summer investigations was to gain some knowledge on this contact in particular, and to determine possible favourable host rocks for a massive sulphide ore body.

3.2 Regional Geology

The property lies in a block between the Art Lewis and Duke River Fault and Denali Fault System informally named the Kaskawulsh Group or Terrane 3 defined by Campbell and Dodds, 1979. This corresponds also to the Alexander Terrane described in Yukon by Read and Monger 1976.

The sequence consists of thick Cambrian and /or Ordovician pillow basalt and flows,breccia, tuff and minor limestone, and a thick Ordovician and /or Silurian carbonate, greywacke and argillite with local basaltic and andesitic flows and associated volcanoclastic sediments.

In addition, the group includes Devonian and possibly younger carbonate and clastic rocks.

The sequence is intruded by a variety of late Paleozoic to Tertiary plutons and dykes of gabbroic to granodioritic composition, which may be related to the volcanic episode.

3.3 Local Geology

In the restricted area mapped in more details this year, four units were recognized:

Unit I

Upper Cambrian - Ordovician meta-volcanic, pillow lava and flows, breccia.

Unit II

Ordovician and /or Silurian volcanic - sedimentary complex.

Unit III

Devonian - Mississipian carbonate and clastic rocks with volcanic intercalations.

Unit IV

Late Paleozoic - Tertiary intrusive rock, granite - diorite.

Regional metamorphism reached the green schist facies.

Lithology

Unit I

Upper Cambrian - Ordovician

This unit consists of porphyritic, massive, greenish grey meta-andesite in flows and also pillow lava, which are concentrated towards the top of the unit.

Local columnar jointing is visible, which might indicate either subaerial or extremely shallow submarine deposition.

Volcanoclastics are intercalated in the series and can be present on top of the pillow lava, where they consist of felsic and acid volcanic breccia and agglomerate. This zone is very fractured and altered and shows a reddish brown weathered surface colour. Sericite and epidote can be recognized on fresh fracture. Fine disseminated pyrite is weathered in limonite, specially in fracture zones. Quartz and calcite veins are also common.

Unit II

Ordovician and /or Silurian

This unit consists of alternate bands of detritic and volcanic rocks.

The detritic members can be several hundred metres thick and are mainly dark-grey finely banded siltstone, shale and black argillite.

The volcanics, a few metres up to fifty metres in thickness, consist of tuffaceous phyllite and greywacke, and dark-green porphyric rocks (diabase). Tremolite, serpentine and chlorite appear in the basic volcanic bands.

Disseminated pyrite and pyrrhotite occur throughout this sequence.

Unit III

Devonian - Mississipian

This unit consists mainly of massive to thin-bedded white to light grey recrystallized limestones.

Argillaceous, tuffaceous and volcanic rocks occur as interbeds within the unit.

A characteristic feature is the presence of tuffaceous lenses within the carbonate unit. These lenses are irregular in shape but generally elongated in the bedding direction and can measure up to 50 metres in length.

Unit IV

Late Paleozoic - Tertiary

This unit consists of intrusive rocks which range in composition from a granite to a diorite. On the claim area, only one limited outcrop has a granodiorite composition, cutting through the limestone of Unit III.

3.4 Structure

The general structure in the area appears to be variable in the different units, according to the competency of each rock type.

The volcanic assemblage of Unit I shows a regular dip to the west of about 40^{o} with local open folds.

The volcanic and sedimentary rocks of Unit II and III are intensively folded, with internal small scale folding and a

succession of tight vertical folds running on a general north-west to north - north-west direction with a variable axial plunge around 40° to the N.W.

Thrust faults and transcurrent faults affect all the series, and an important vertical fault is inferred under a lateral glacier to account for a right lateral movement of 12,000 metres in an east-west direction.

The contact between Unit I and II is very sharp and well exposed in the south side of the East Arm Glacier, in the area where the pillow lava forms the top of Unit I.

The contact is subvertical to steeply dipping to the south-east, and strikes into a north-west direction (335°).

In the vicinity of East Arm Glacier, the top of Unit I consists of acid breccia and agglomerate in contact with Unit II.

It is noticeable that the strike extension of this contact under East Arm Glacier coincides with the main axes of the magnetic anomaly.

3.5 Interpretation

The mineralogical observations made on the massive sulphide boulders indicate that the host rock consists of both volcanic and pelitic rock fragments. The main constituent being chalcedony with a minor amount of carbonate material.

This points out that the host rock for the massive sulphide mineralization either belongs to the top of Unit I where acid volcanic breccia and agglomerate are in contact with Unit II, or to Unit II itself with the volcanic-sedimentary complex.

The spacial position of this contact under East Arm Glacier also coincides with the magnetic anomaly.

All these observations suggest that the source of the massive sulphide boulders can be assigned to the area underlying the magnetic anomaly in the central part of East Arm Glacier, and that a significant mineralized body must still be in place.

This interpretation is also based on the general model of strata-bound massive sulphide deposits. These are always connected in time, to the different submarine explosive acid volcanic rocks. In space they are confined to the vicinity of the volcanic centers, either deposited directly on massive acid pyroclastics, or at some distance and interbedded with black shales and tuffs.

3.6 Conclusions

Lithological and structural observations confirm that the source of the massive sulphide boulders found in the front of the East Arm Glacier is likely underlying the large magnetic anomaly in the center of East Arm Glacier.

This zone coincides with the strike extension of the contact of two favourable host rock units which are:

Unit I: intermediate and acid volcanic rocks and

Unit II: volcanic and sedimentary rocks.

This contact strikes into a north-west direction ($335^{o} \pm 5^{o}$) and is steeply dipping to the south-east.

3.7 Recommendations

Further work recommended on the property would consist of:

- Detailed geological mapping at a scale of 1 : 10'000 of the claims area and its immediate surrounding,
- Structural analysis in order to propose an interpretation of the structure under the glacier,
- Detailed prospecting on the claim area and study of the alteration zone in the acid volcanic rocks of Unit I,

- Detailed study and mapping of the moraine pattern in order to reconstruct the trend of massive sulphide boulders to their source,

- Geophysical methods are limited by the ice cover. However, attention should be given to the possibility of using a giant loope EM survey from the bottom of drill holes through the ice, using hot water drilling.

  This method would be applied on the area of the magnetic anomaly,

- After narrowing down the drilling target under the ice, if applicable with the methods mentioned above, a diamond drilling programme would investigate the presence of massive sulphide body under East Arm Glacier.

G. Della Valle

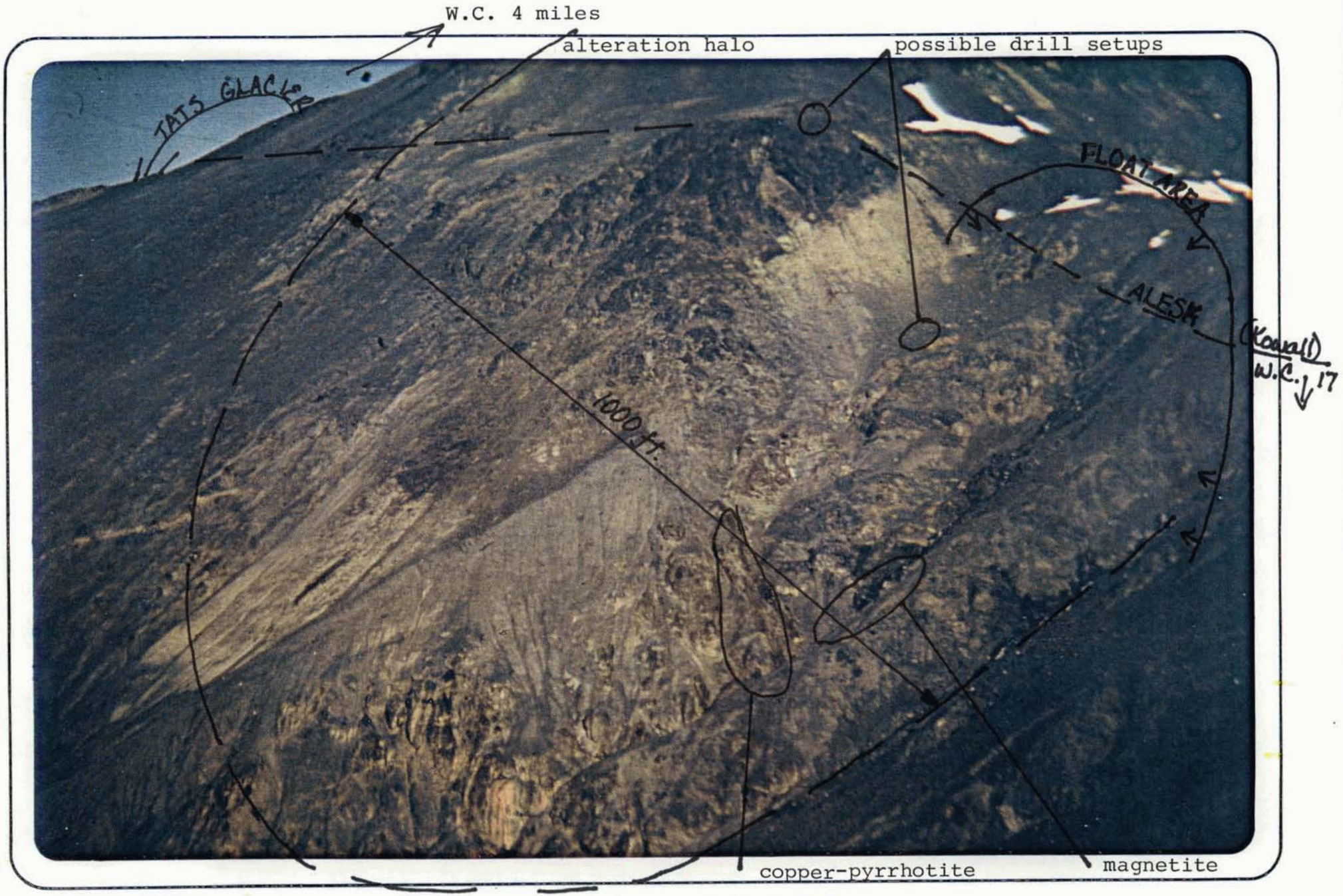
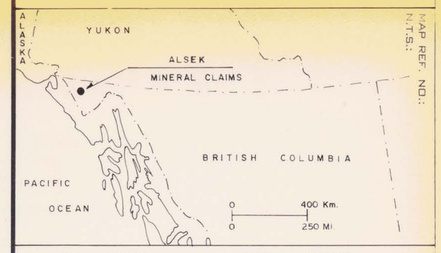


PHOTO: Tats Deposit (Looking West)



INDEX (1-A/80) SCALE 1 160 000

ROCK SAMPLES

NO.	DESCRIPTION	ASSAYS Cu %	Ag oz/ton	Au oz/ton	Co %	Pb %	Zn %
①	Float, Siliceous & Chlorite vein material cpy, pyrrhotite	1.68			0.058		
②	Float, massive sulfide boulder 12" in. diameter pyrrhotite & fine grain cpy.	3.34			0.180		
③	Float, cherty chloric rock cpy & bluish sulfide, pillow basalt	0.25			0.012		
		* 0.10	L 0.02	L .002	0.070		
④	Float, chloric andesite, chalco-pyrite as stringers & disseminations	2.08			0.006		
		* 0.47	0.02	L .002	0.080		
⑤	Outcrop - selected grabs, Tats showing cpy, py in chlor andesite	10.1			0.084		
⑥	Float, chlor andesitic bottom of Tats ck., diss cpy, pyr, in chlor andesite	0.51			0.058		
⑦	Float, massive magnetite & chalco-pyrite float	0.19			0.014		
⑧	Float, grabs of massive sulfide boulders pyr, py, cpy	0.25			0.110		
		* 3.75	0.05	0.002	0.160		0.03
⑨	Float, grabs of chlorite andesite carrying blebs & stringers py, cpy, pyr	0.21			0.084		
		* 0.17	0.31	0.002	0.010	1.16	4.40
⑩	o.c. green chloritic shear zone selected grab cpy, py 1'-3' wd. zone	1.28			0.021		

NOTE * Samples assayed by J.J. McDougall

LEGEND

1 SHALE, LIMESTONE may be of chemical origin

2 ANDESITE highly chloric often with diss. to massive py, pr, cpy

3 ANDESITE AND PILLOW LAVA may be highly altered (chert, chlorite accessory sulfides)

4 INTRUSIVE hornblende, diorite

CHRONOLOGIC AGE NOT ESTABLISHED

200 0 200 400 600

SCALE: 1: 20 000

FALCONBRIDGE NICKEL MINES LIMITED

PROPERTY: PROSPECTING MAP OF ALSEK, ALSEK 2, & ALSEK 3 MINERAL CLAIMS (after C. Kowall)

LOCATION: ALSEK RIVER AREA B.C.

TYPE OF MAP: RECONNAISSANCE, GEOLOGY & PROSPECTING

WORKING PLACE: TATS LAKE CAMP

BASED ON:

DATE OF WORK: SEPT. 1981

DRAWN BY: C. Kowall, P.A.

DATE: SEPT '81

MAP REF. NO.: 114 P TATSENSHINI (TOPO)

N.T.S. NO.: 114P 12 E&W

FIG. NO.: 14-81

CANADA

W-C. Deposit

Pillow Flow outline G.S.C. 1978-79

Tats Deposit

Campsite

Float Area

Alsek Flats

Maid of Erin

THE DECLINATION OF THE COMPASS NEEDLE 1961
DÉCLINAISON MAGNÉTIQUE EN 1961

The declination of the compass needle is decreasing 3.5 minutes annually.
La déclinaison magnétique décroît de 3.5 minutes annuellement.

Compiled 1958-60 by the **ARMY SURVEY ESTABLISHMENT, R.C.E.** from air photographs taken in 1950 and 1955. U.S.A. information supplied by the **UNITED STATES GEOLOGICAL SURVEY.** Printed 1962.

Copies may be obtained from the Map Distribution Office, Department of Mines and Technical Surveys, Ottawa.

TATSHENSHINI RIVER

CANADA ~ UNITED STATES

Scale 1:250,000 Échelle

Miles 5 0 5 10 15 20 Miles
Kilometres 5 0 5 10 15 20 25 30 Kilomètres

Transverse Mercator Projection
North American Datum 1927
Contour Interval 500 feet

Compilée en 1958-60 par le **SERVICE TOPOGRAPHIQUE DE L'ARMÉE (G.R.C.)** d'après les photographies aériennes prises en 1950 et 1955. Renseignements relatifs aux É.-U. fournis par le **UNITED STATES GEOLOGICAL SURVEY.** Imprimée en 1962.

Ces cartes sont en vente au Bureau de distribution des cartes, ministère des Mines et des Relevés techniques, Ottawa.

Projection transverse de Mercator
Réseau géodésique nord-américain unifié 1927
Équidistance des courbes: 500 pieds

Road
hard surface, all weather ... Route pavée, toute saison ... more than 2 lanes plus de 2 voies; 2 lanes 2 voies; less than 2 lanes moins de 2 voies
loose surface, all weather ... de gravier, toute saison ... 2 lanes or more 2 voies ou plus; less than 2 lanes moins de 2 voies; dry weather période sèche
cart track, trail ... de terre, sentier
Spot elevation; precise, approximate ... Point coté; précis, approximatif ... 950 - 950±
Boundary monument ... Borne-frontière
Depression contours ... Courbes de cuvette

Building ... Bâtiment
Post office ... Bureau de poste
Church ... Église
School ... École
Astronomical monument ... Repère astronomique
R.C.M.P. Detachment ... Poste de la G.R.C.
Horizontal control point ... Point géodésique
Intermittent stream ... Cours d'eau intermittent
Intermittent lake ... Lac intermittent
Rapids; falls ... Rapides; chute
Marsh or swamp ... Marais ou marécage
String bogs ... Marais en chapelet
Icefield or Glacier ... Champ de glace ou glacier
Tundra Polygons ... Sols polygonaux

Index to adjoining maps of the National Topographic System
Tableau d'assemblage du Système National de Référence Cartographique

TATSHENSHINI RIVER
114 P
EDITION 1

Map 034-80-3