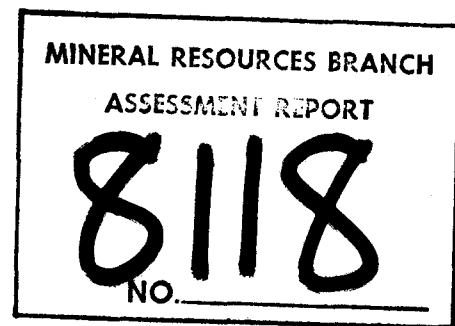


PREPARATORY REPORT AND  
TOPOGRAPHIC SURVEY

W.C.W. Group and W. C. 3 Mineral Claim  
Tatshenshini River Area  
Atlin M. D., B. C.  
NTS 114P/12

Lat.:  $59^{\circ}43'00''$  N.      Long.:  $137^{\circ}45'00''$  W.

Owner & Operator: Falconbridge Nickel Mines Ltd.



July 30, 1980  
Vancouver, B. C.


  
J. J. McDougall, P. Eng.

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## INTRODUCTION

The included topographic survey map and accompanying report is preparatory to a more detailed geological and drilling report expected in the near future.

Existing local topography available in this unusually rugged and isolated region of the St. Elias Mountains (Index Map 80-101(b)) is poor to non-existent since usable overlapping photography was non-existent until 1979 - 1980. The existence of this photography was totally unknown to the Provincial Air Photo Library and even the G.S.C. (possibly to present). Much costly time, not allowed for in the cost records accompanying this report, was thus wasted trying to piece together enough obsolete material from both '1945 hit-and-miss' photography and later attempts which filmed little more than snow. 50,000 scale maps may be available in 1984 - 85.

Ground survey control and/or establishment of prominent features was essential and proved to be extremely costly as helicopter support in this area, where 1000 foot ice crevasses are common, was a necessity.

Tests were made on 500 pounds of freshly collected geological samples with a view towards modern reclassification of the largely ice-covered sulphide deposit, and thus establishment of a model required as a guide to future exploration in the area. A condensation is included as the only available update on geology, but it is hoped to expand on this considerably.

Two claim groups are covered by the present report - the W.C.W.-which includes, for grouping purposes, the Windy and Craggy earlier-located 2 post claims, and the W.C. 3 Mineral Claim of 20 units. The eastern boundary of the latter will probably be shown by our more accurate surveys to be farther east than located on Gov't Claim , Map #114P/12(a) enclosed.

1974

137° 45'

Glacier

← Glacier

W.C. 1  
800 (9)

W.C. 3  
802 (9)

1/2

W.C. 2  
801 (9)

MUS-U  
18 ✓

2/2

A. 15093


A. 15093

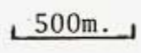
64 (10)

61 (10)

Map 114P/12(b)  
W. C. Claim Area

Scale 1"=800m ±

 Area covered by topographic survey

 500m.

Glacier



(1) The W.C. 1, 2, 3, Windy and Craggy Claims are located near a glacial ice cap between the head of Tats and Frobisher Glaciers, locally named features between the Alsek and Tatshenshini Rivers in extreme northwest B. C. The property is about 250 km. due west of Atlin and 24 km. north of the junction of the Alsek and Tatshenshini Rivers. Elevations on the property range from 1400 to 2200 metres and snowfall, as yet unmeasured, is heavy. The working season for geological mapping can range from 2 weeks in August to include a month on either side, and the drilling season can be slightly longer when water, which may have to be flown in, is available.

Access for practical purposes is entirely by helicopter from the closest usable base at Whitehorse, Yukon Territory although the mountains and glaciers can be climbed from small and rare lakes, or unpredictable landing sites between rocks or icebergs on the Alsek and Tatshenshini Rivers.

#### PROPERTY DEFINITION

The Windy - Craggy prospect is a cupriferous pyrrhotite deposit all but ice bounded except for portions of its western contact. Drilling has been insufficient to allow meaningful tonnage - grade calculations.

The area of interest was first noted by Ventures Limited (now Falconbridge Nickel Mines Limited) crews field-directed by the writer in 1957 during wide ranging geological reconnaissance of the St. Elias Mountains. The Windy - Craggy claims were staked in 1958 and the W. C. 1 to 3 claims were added in 1979. Minimal packsack drilling was done on exposed portions of the deposit at intervals between 1958 and 1964. In 1965 several longer BBS1 holes were completed, one of them through the icecap. Limited ground geophysics has been attempted from time to time.

## GEOLOGY

A brief preliminary description of the geology follows:

The Windy - Craggy occurrence located in north-western British Columbia is a little explored deposit containing both epigenetic feeder pipe sulphides and syngenetic conformable massive sulphides. Where better exposed regionally, the setting is one of greenschist facies Devonian (?) tholeiitic pillow flows overlain conformably by black, marine carbonaceous shales and siltstones. Stilphomelane is a characteristic mineral in both formations.

The tholeiitic basalt flows lack fossils and radiometric dating, and are similar to Cambrian, Devonian and Permian volcanic piles nearby in Alaska.

A Devonian age is preferable because of the regional tectonic and stratigraphic setting. The volcanic assemblage, if not repeated by faulting, consists of at least 6,000 feet (2,000 m.) of vesicular pillow flows, breccias, minor tuffs and massive flow rocks. Sparse, thin layers of sulphides and green chert occur locally in the sequence. The flows seem to satisfy parameters of a submarine basalt plateau complex that includes sparse minor dykes and sills of gabbro and diorite.

Overlying the volcanic rocks, (regionally as well as locally in part) is a quiet-water facies marine sedimentary sequence consisting mostly of thinly banded carbonaceous shale and siltstone. Structures may cause reversals locally. The contact between the two formations is poorly exposed and the transition from flows to shale is not known in detail. However, the transition zone includes conformable sulphide masses, limestone lenses and some cherty sediments. The footwall of the chemical sedimentary rocks is pillow basalt and the hangingwall is shale, but more than one such sequence is suspected. In the one poorly exposed area where most work has been done, however, structural complications cause interpretation

difficulties and the steep "footwall" may give way to "hanging wall". Not all chemical sediments are everywhere present.

The most favourable locus for conformable sulphides is the transition zone from pillow flows to shale, but this is poorly exposed. These sulphides consist of pyrrhotite with minor pyrite and chalcopyrite, or pyrite with traces of minor pyrrhotite, chalcopyrite and sphalerite. Pyrite texture varies from massive to spheroidal and framboidal. Sulphides are banded, massive or brecciated. The spheroidal and framboidal textures could have developed from pyrite precipitating from either a gel or an ionic source, but the breccia and massive ores can reflect particulate deposition. Zoning of chalcopyrite and sphalerite has not been well demonstrated by drilling. Fe:Cu ratios are 20:1 in syngenetic ore. Gangue minerals include siderite and chlorite. Graphite is suspected. The siderite commonly exhibits an oolitic habit. Barite has not been identified. Stilphomelane occurs, but it could be metamorphic.

Epigenetic sulphide-bearing feeder pipes are indicated in the flow sequence and are characterized by an abundance of pyrrhotite with moderate to minor chalcopyrite and pyrite. The flows are altered to chlorite schists, but minor stilphomelane, quartz, graphite (?) and siderite occur. Sulphides in the feeder pipes lack spheroidal and framboidal textures and generally exhibit a schistose texture. Vein-quartz and siderite are common gangue minerals associated with the epigenetic sulphides. Feeder pipes are poorly exposed, but they seem to contain significant sulphide mineralization.

The onepillow lava specimen examined showed fresh, quench-textured plagioclase (andesine) phenocrysts exhibiting acicular and swallow-tailed grains in a groundmass of similar material showing plumose or radiating textures. The feldspars are weakly sausseritized,

and interstitial carbonate (calcite) - patches up to 2% - contain minor chlorite, epidote, and amphibole (possibly pseudomorphous after olivine). Ferro magnesian (minerals) are rare. Chemical analysis shows  $\text{SiO}_2$  - 47.9%,  $\text{MnO}_2$  - 0.611%,  $\text{FeO}$  - 6.81%,  $\text{Fe}_2\text{O}_3$  (total Fe) - 7.61%,  $\text{TiO}_2$  - 0.85%,  $\text{Na}_2\text{O}$  - 5.61%,  $\text{K}_2\text{O}$  - 0.48%,  $\text{Al}_2\text{O}_3$  - 16.12%,  $\text{MgO}$  - 5.56% and  $\text{CaO}$  - 8.52%. Several pillow formations are present, but whether they are more basaltic than the fresher one suggested as andesitic(?) by the above analysis is not known at this time. Metals present in ppm are Cu - 54, Pb - 39, Zn - 77, Ag 1.9, Ba - 599, Sr - 380 and Rh - 8.

Massive (50 - 80%) cupriferous pyrrhotite crops out for at least 1000 metres in a northwest direction along a steep, locally irregular contact between a shale - andesite complex on the southwest and a basaltic pillow lava to the northeast. Unfortunately the contact for its whole exposed length also marks the western edge of a large icecap which effectively masks the width of the sulphides. In excess of 100 metres of depth and width have been drill proven locally, but the overall configuration is not known. Geophysics is hampered by topography, ice cap, rock alteration, crevasses and the generally weak magnetics associated with the sulphides. For an additional 500 metres more to the north, as well as to the south, remnants (?) of pillow lavas exposed are occasionally mineralized with 10-30% cupriferous sulphides across significant widths. There is a suggestion that the pillows act as the commonest host rock for the massive sulphides, but the latter are present near the shale contacts as well. Cuprite of unknown origin occurs as float in the shales. It appears supergene even though ice-covered until half a century ago. However the upper portion of the pyrrhotite, as noted by drill through 50 to 100 feet of icecap, was altered to a cellular gossan. This suggest that glaciation in this spectacular semi-icefield may not have been severe at this elevation, or that the highly acidic waters present may have been active during an extended period of low precipitation and advanced melting.



TOPOGRAPHIC SURVEY

The total area surveyed is 10.36 km<sup>2</sup>.

Maps

- 1) An Index Map of the Claim Area is attached - 114P/12 (b)- and the boundaries of the topographic maps produced are shown.
- 2) The topographic maps show major established ground control points as triangles and series of secondary points are joined by red lines. There were established from earlier transit control stations to points identifiable on the best airphotos available. Geological Samples were collected from numerous localities a few hundred feet east of the red lines. Exact locations have not been plotted.
- 3) Claim boundaries are shown on the topographic maps as well as on the Claim Map.
- 4) The topographic maps (80-101 2 sheets) were produced on a scale of 1:2500 with a contour interval of 20 m., using established air photo techniques (Pacific Surveys Ltd., Vancouver).

Base elementation were established through averaging barometric readings (altimeter) taken over many years of helicopter work, the only feasible method in an area where the closest surveyed stations are on the Yukon Border 85 km. to the north. Government 50,000 scale maps are not expected until at least 1985 (if ever) although established control points may be set within binocular range by then.

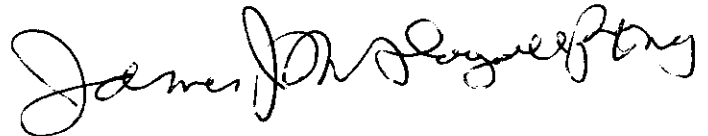
STATEMENT OF EXPENDITURES

A. <u>Wages</u>		
J. J. McDougall, P. Eng. - Supervision		
2 days - August 17, 18 @ \$300/day	600.00	
2 days - May 1, 2, (1980) \$300/day (Map addition)	600.00	
J. Wilson, BSc Geology		
5 days (August 17 - 21) @ \$120/day	600.00	
J. Hugi - Technician		
5 days (August 17 - 21) @ \$120/day	600.00	
		<u>2400.00</u>
B. <u>Transportation</u>		
1) Cassiar - Whitehorse Return (August 15 - 22)		
(J. Wilson and J. Hugi)	420.00	
J. McDougall Vancouver - Whitehorse return	200.00	
2) Trans North Helicopter		
Whitehorse to Mineral Claim, Aug. 15-21		
Total Billing \$3347.84 - portion applicable		
\$2183.00 (local and to Whitehorse)	2183.00	
Total Transportation		<u>2803.00</u>
C. <u>Food and Lodging</u>		
Food for 12 man days @ \$18/day (Aug 17 - 21)	216.00	
Accommodation (Aug 17 - 21)	200.00	
Use of equipment - tents, transits, chain, ice equipment (lost, etc.)	200.00	
Total Food & Lodging		<u>616.00</u>
D. Office supplies, airphotos, preparation	100.00	
E. Topographic Map Preparation		
Pacific Surveys	1540.00	
		<u>7459.00</u>
	Grand Total	\$7459.00

Of this amount, \$4000.00 is to be applied to the W. C. W. Group Mineral Claims and \$3459.00 is to be applied to the W. C. 3 Mineral Claim.

STATEMENT OF QUALIFICATIONS

- 1) James J. McDougall , P. Eng. B. C.  
30 years exploration in B. C., most as a geologist  
for Falconbridge Nickel Mines Limited.  
- numerous reports in M.M. file.
- 2) John R. Wilson  
Holds a Bachelors degree in geology from U.B.C. and has  
worked for Falconbridge Nickel Mines Limited intermittently  
for the better part of 10 years.
- 3) J. Hugi - Field Technician - Swiss Alpinist  
Has been employed as a technician by Falconbridge  
Nickel Mines Limited for 10 years.



J. J. McDougall

JJM:ik

REFERENCES

- 1) M MAR - 1959, 1960 p. 6
- 2) September 1970 - check BCDM listing for geophysical report submitted by Steve Presunka.
- 3) Assessment Report 5608 - 1975

1974

137°45'

Glacier

← Glacier

W.C. 1  
800 (9)

W.C. 3  
802 (9)

1/2

W.C. 2  
801 (9)

MUS-U  
18 ✓

2 1/2 MUS-R ✓

A. 15093

A. 15093

64 (10)

61 (10)

Map 114P/12(b)  
W. C. Claim Area

Scale 1"=800m ±



Area covered by  
topographic survey

500m

MINERAL RESOURCES BRANCH  
ASSESSMENT REPORT

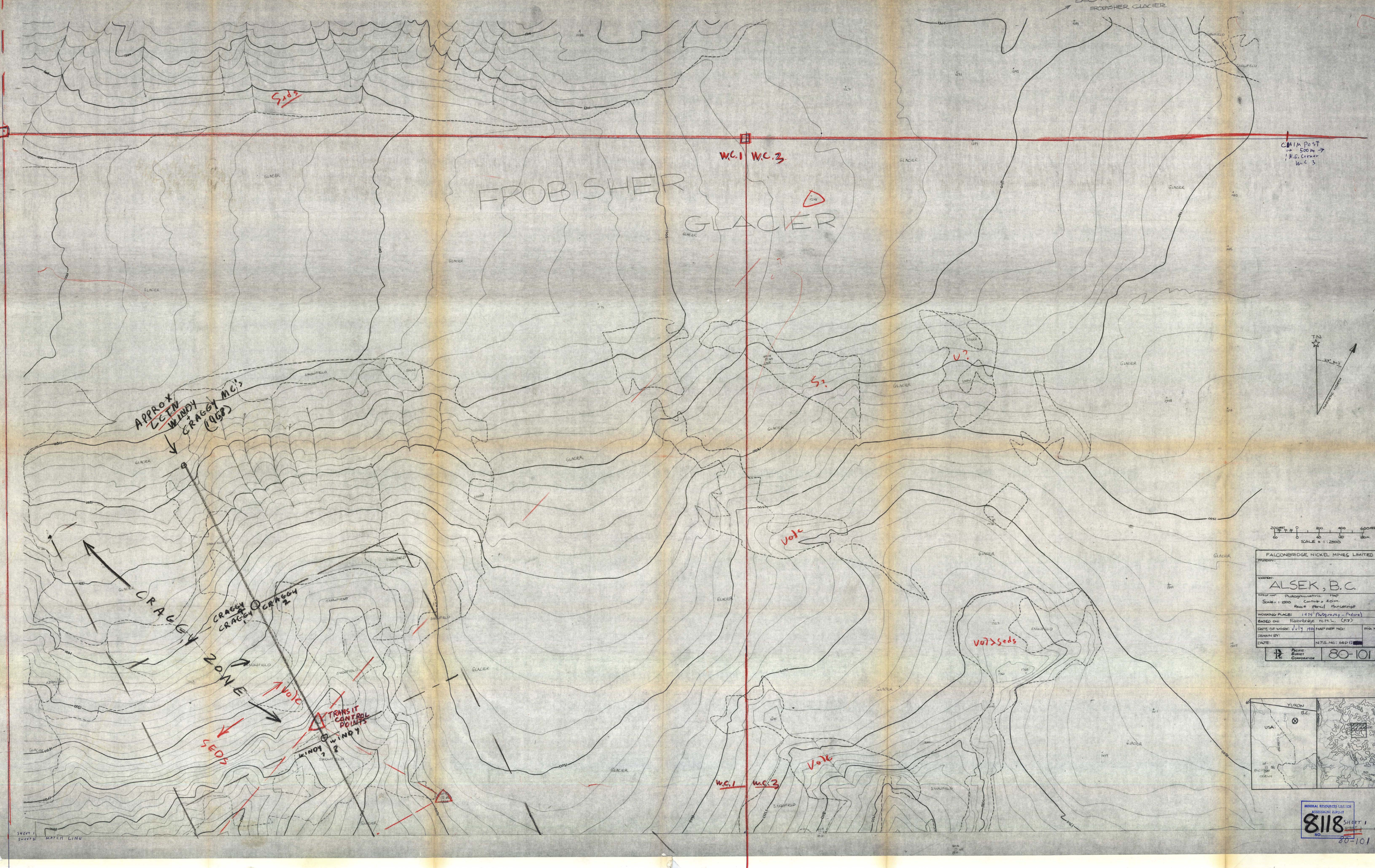
8118

NO.

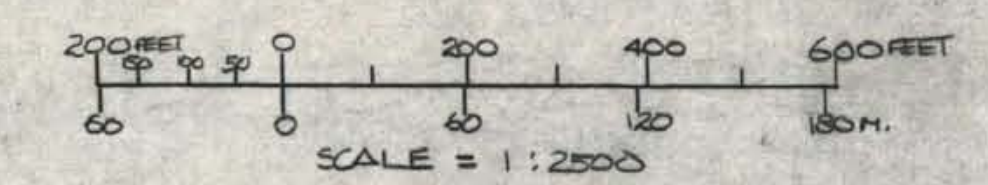
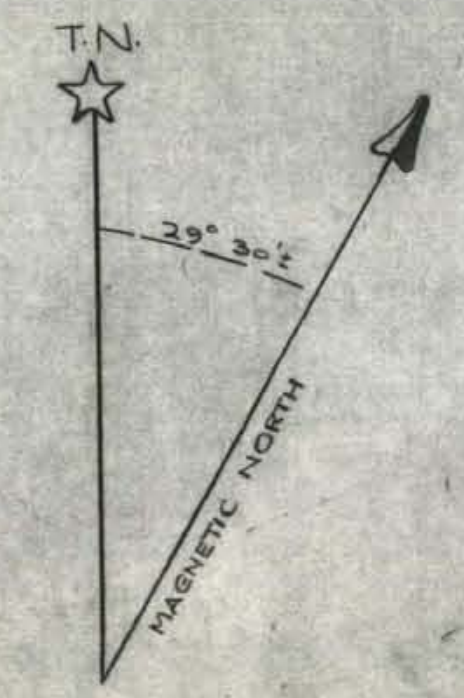
Glacier



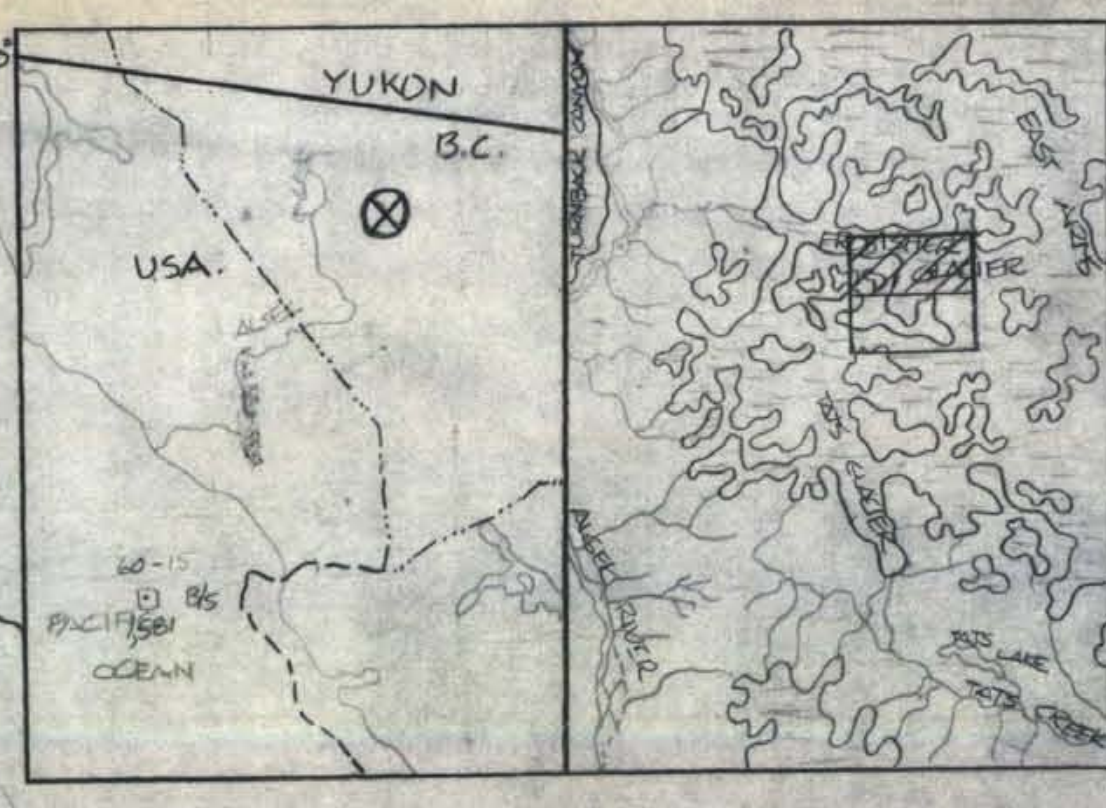




CLAIM POST  
 500 m →  
 N.E. CORNER  
 W.C. 3



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RECORD: (Partial Manuscript)	
WORKING PLACE: 1979 Photography - Pictures	
BASED ON: Frobisher N.M.L. (1979)	
DATE OF WORK: July 1982	MAP SHEET NO.:
DRAWN BY:	REG. NO.:
DATE:	N.T.S. NO.: 1487 12
PACIFIC SURVEY CORPORATION	
80-101	



MINERAL RESOURCES BRANCH  
 ASSESSMENT REPORT  
**8118** SHEET 1  
 NO. 80-101

SHEET 1  
 SHEET 2  
 WATER LINE



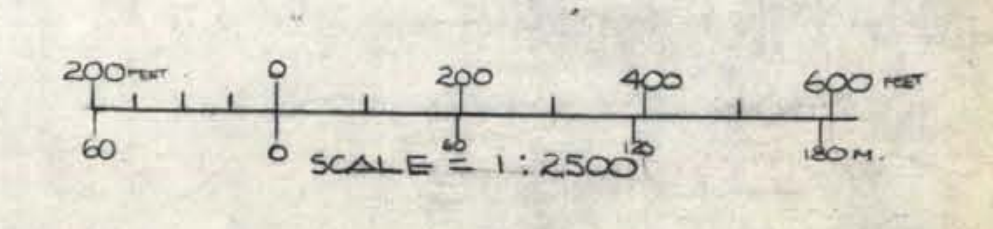


W.C. 1  
W.C. 2  
W.C. 2  
51882

WINDY 1  
WINDY 2  
WINDY 3  
WINDY 4  
WINDY 5  
WINDY 6  
WINDY 7  
WINDY 8

JATS  
GLACIER  
Craggy  
Old  
Claims (1958)

W.C. 1 51881  
W.C. 2 51882  
W.C. 3 51883



FALCONBRIDGE NICKEL MINES LIMITED	
PROPERTY:	
ALSEK, B.C.	
Type of Map: Photogrammetric Map	
Scale: 1:2500 Contour: 20 m	
Source: Aerial Photograph	
Working Place: 1979 Photogrammetry - Federal	
Based on: Falconbridge 1:25,000 (1977)	
DATE OF WORK: 11/4/77	MAP REF. NO.:
DRAWN BY:	FIG. NO.:
DATE:	N.T.S. NO.: 84-DP, 0/16

Pacific  
Survey  
Corporation

80-101

MINERAL RESOURCES DIVISION  
ASSESSMENT REPORT  
8118

