

GEOLOGICAL SURVEY REPORT
on the
FETCH, HASTEN and BASIN MINERAL CLAIMS
Macmillan Pass Area

Watson Lake and Mayo Mining Districts
Yukon Territory

Longitude: 130°12'W

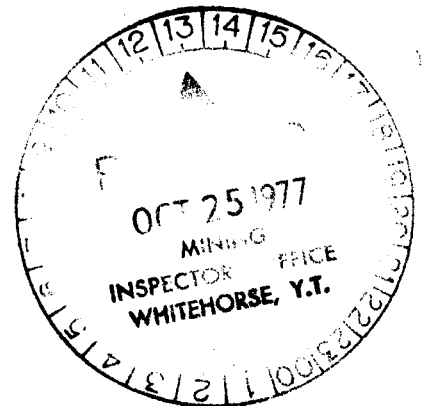
Latitude: 63°06'N

Map Sheet: N.T.S. 105-0-1

by

Edward J. Debicki,
District Geologist, Northwestern Canada,
CANADIAN NICKEL COMPANY LIMITED

May 17, 1977 - July 9, 1977



090 236

This report was prepared by
Geological Survey of Canada
submitted to the
ed as representative

923998

J.B. Craig

Resident Geologist or
~~Resident Mining Engineer~~

Considered as representation work under
Section 53 of Yukon Quartz Mining Act.

B.R. Baxter

B. R. BAXTER
Supervising Mining Recorder

Commissioner of Yukon Territory

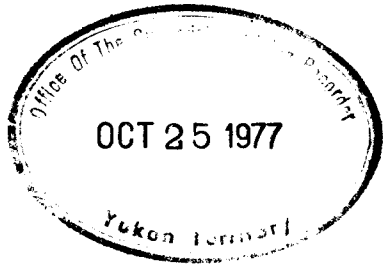


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- Appendix 1 - Personnel
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Maps

Claim Location Map - Scale: 1" = 65 miles

Claim Map - Welcome North Option, South Group - Scale: 1" = 2640'

Back Pocket:

- Geology Survey - Sheet E-7 - Scale: 1" = 200'
- Geology Survey - Sheet F-7 - Scale: 1" = 200'
- Geology Survey - Sheet G-7 - Scale: 1" = 200'
- Geology Survey and Legend - Sheet G-8 - Scale: 1" = 200'
- Geology Survey - Sheet H-7 - Scale: 1" = 200'
- Geology Survey - Sheet H-8 - Scale: 1" = 200'
- Geology Survey - Sheet J-7 - Scale: 1" = 200'

INTRODUCTION

The FETCH, HASTEN and BASIN claim groups were staked by Welcome North Mines Ltd. (N.P.L.) during July and August, 1976. The groups, consisting of 68 claims, are adjacent to and south of the JASON claim group, held by the Ogilvie Joint Venture, where drill intersections of Pb-Zn-Ag have been reported.

The FETCH, HASTEN and BASIN claim groups were acquired under option by Canadian Nickel Company Limited during 1977. Exploration to date has consisted of a magnetometer survey and geological survey. Additional staking of FETCH 21-25 and HASTEN 25-34 was carried out during June 1977, bringing to 83 the total number of claims.

LOCATION AND ACCESS

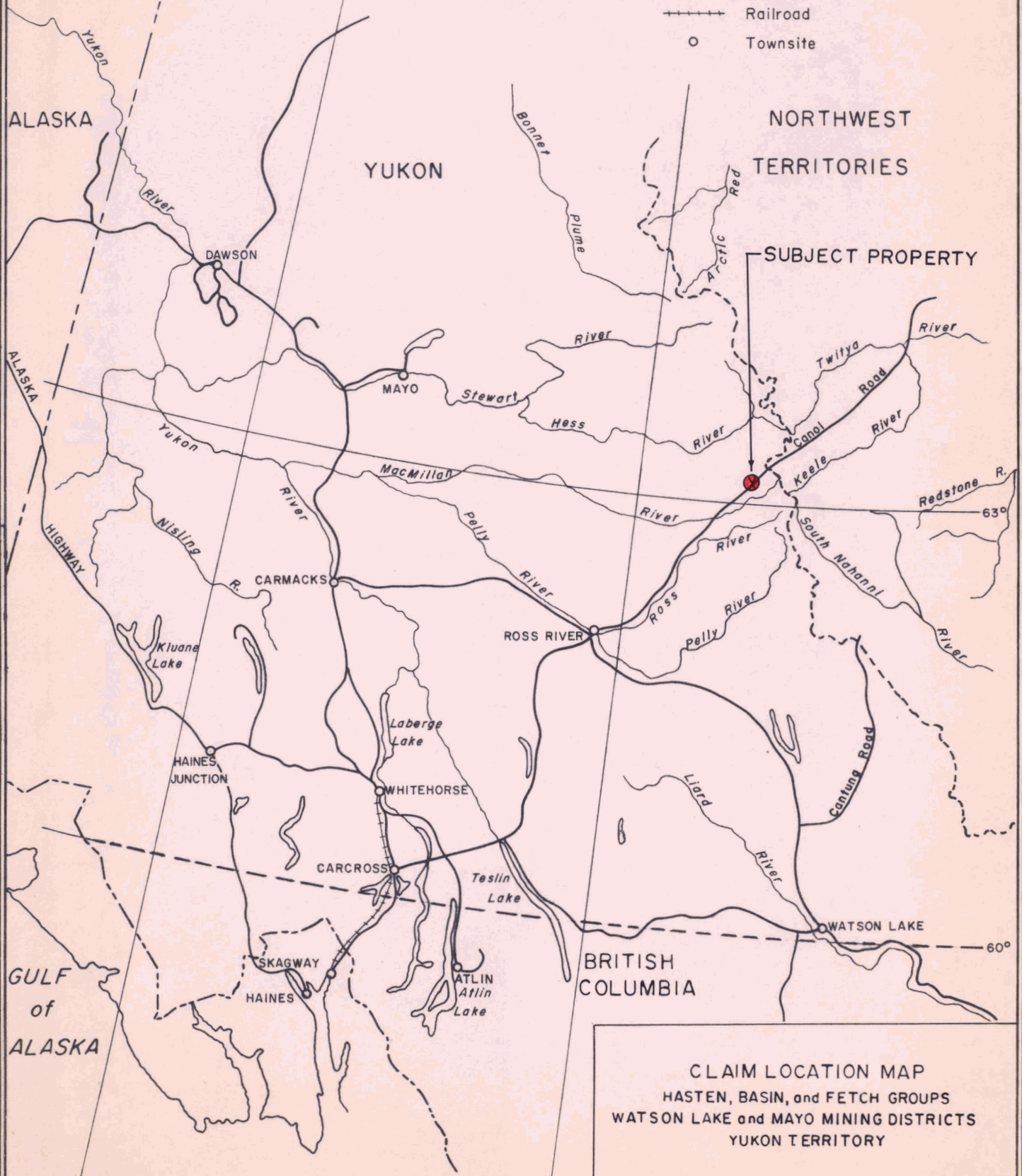
The FETCH and HASTEN claim groups are situated in the Mayo Mining District, Yukon Territory; the BASIN claim group is situated in the Watson Lake Mining District, Yukon Territory. The claim groups lie within N.T.S. area 105-0-1 at 130°12'W longitude and 63°06'N latitude. Ross River, Yukon Territory, is located approximately 105 air miles to the southwest of the claim groups.

Access to the claim groups is by way of the North Canal Road (summer traffic only) from Ross River, Yukon. The road transects the claim groups and forms the boundary between the Watson Lake and Mayo Mining Districts. Access within the claim groups is by foot or by helicopter. A base camp was situated on claim FETCH 21 (YA15167) between the South Macmillan River and the North Canal Road at Mile 268.1. An airstrip is located near Macmillan Pass alongside the North Canal Road, approximately seven miles north of the base camp location.

SOUTHERN YUKON TERRITORY

Scale 1 inch = 65 miles

- International Boundary
- - - Provincial Boundary
- Highway
- + + + Railroad
- Townsite



CLAIM LOCATION MAP
 HASTEN, BASIN, and FETCH GROUPS
 WATSON LAKE and MAYO MINING DISTRICTS
 YUKON TERRITORY

TOPOGRAPHY AND CLIMATE

The claim groups are situated within the Hess Mountains region of the Selwyn Mountains. The elevation difference between the claim groups is approximately 1900 feet, with the highest point approximately 5650 feet above sea level. All areas of the claim groups are accessible by foot. Slopes range from 0° to 45°, with slopes of 25° to 35° occurring in most areas of talus and outcrop.

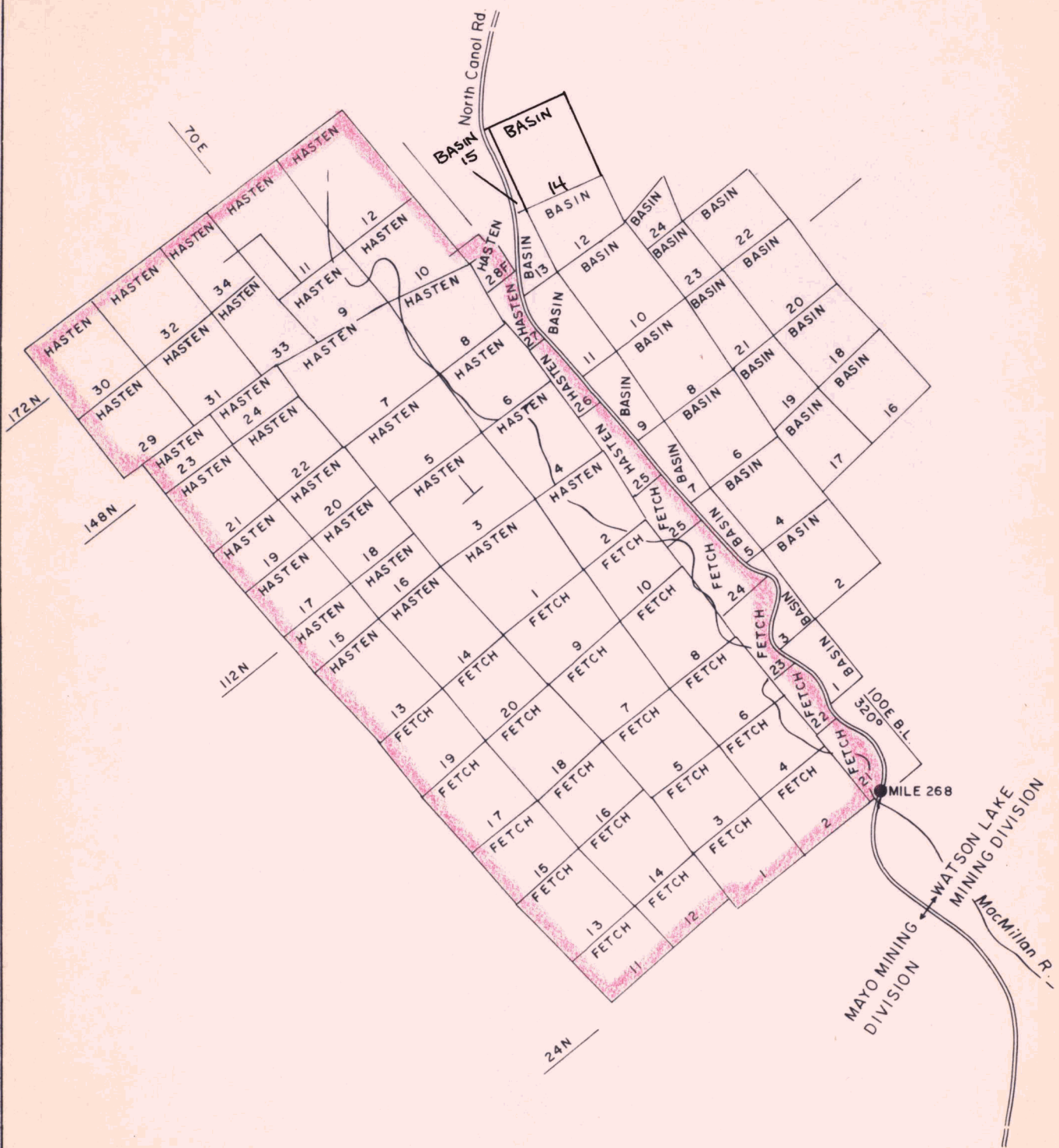
During the latter part of May and during June the weather was mainly cool and overcast, with frequent rain, snow and hail falls. The early part of July was characterized by cool weather, again with rain and snow falls; the latter part of July was warm and mainly sunny.

The tree line on the claim groups is approximately 4500 feet above sea level. Below the tree line, the area is forested by fir, black spruce, willow and arctic black birch. Mosses and lichens cover much of the claim groups above the tree line.

CLAIMS COVERED

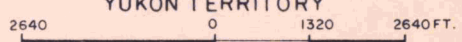
Work was carried out on all claims which were not overstaked onto previously-existing claims. All work was performed by personnel of Canadian Nickel Company Limited.

<u>Claims</u>	<u>Record Numbers</u>	<u>Mining District</u>
FETCH 1-16	YA5963 - YA5978	Mayo
FETCH 17-20	YA6144 - YA6147	Mayo
FETCH 21-25	YA15167 - YA15171	Mayo
HASTEN 1-4	YA6140 - YA6143	Mayo
HASTEN 5-24	YA5943 - YA5962	Mayo
HASTEN 25-28F	YA15172 - YA15175	Mayo
HASTEN 29-34	YA15325 - YA15330	Mayo
BASIN 1-24	YA192 - YA215	Watson Lake
	<u>Total: 83 claims</u>	



CLAIM MAP
WELCOME NORTH OPTION
SOUTH GROUP

HASTEN, BASIN, and FETCH GROUPS
WATSON LAKE-MAYO MINING DIVISIONS
YUKON TERRITORY



All claims are held at present by Canadian Nickel Company Limited except FETCH 21-25 and HASTEN 25-28F which are in the process of being transferred to Canadian Nickel at the time of writing of this report.

GENERAL GEOLOGY

The geology of the area is covered by G.S.C. Open File 205, "Nidderly Lake". Geologically, the area is located on the eastern margin of the Selwyn Basin in Paleozoic fine-grained clastics and shales.

The stratigraphic succession of the Macmillan Pass area has been defined by Clyde Smith of Ventures West Capital after approximately five summers' field work in the area. He considers the TOM and JASON Pb-Zn-Ag deposits to lie within a small miogeosynclinal basin about six miles by eight miles in extent on the margin of a larger geosynclinal basin. This basin centres on the TOM claims, abuts against a possible graben in the HASTEN claims to the southwest and thins out to the east across the southern part of the SIOUX claims. The stratigraphic succession within the miogeosynclinal sub-basin consists of Devonian to Mississippian clastics and shales of the Besa River Formation overlying Ordovician to Silurian clastics, shales and carbonates of the Road River Formation. The area has been intruded by numerous Cretaceous granodiorite intrusions.

Structurally, folding consists of broad, open folds with northwest-northeast trending axis and tight, smaller scale folds with east-west trending axis.

GEOLOGY OF THE FETCH, HASTEN AND BASIN CLAIM GROUPS

(a) Stratigraphy

A generalized stratigraphic section is given below. The stratigraphy

is more specifically defined in the Legend on Sheet G-8 (back pocket of this report).

CRETACEOUS	Unit 5: Hornblende-biotite granodiorite.
	Unit 4: Orange to buff weathering siltstone and fine-grained sandstone, with well-developed parallel and cross laminations and, in places, characteristics of turbidites.
DEVONIAN- MISSISSIPPIAN (Besa River Formation)	Unit 3: Silvery weathering carbonaceous to siliceous shale, without internal stratification except very near the base where parallel laminations are present. Up to four spotted barite horizons occur in this unit (unit hosting TOM and JASON Pb-Zn-Ag mineralization).
	Unit 2: Polymictic conglomerate, with the majority of pebbles of chert. Grain size, percent of pebbles, pebble composition and unit thickness are variable. Unit 2 is approximately 500 feet thick at the TOM and JASON properties and is absent elsewhere.
	Unit 1: Siliceous to carbonaceous shale and silty argillite. The rock is laminated, weathers light to dark grey and is brown to black on fresh surfaces.
ORDOVICIAN-SILURIAN (Road River Formation)	Black limestones, chert, and graptolitic shales (not exposed on FETCH, HASTEN and BASIN claim groups).

Many of the units present show strong lateral variations in facies type and thickness. Syndepositional faulting may have been responsible for at least part of the variation observed.

The succession is Devonian to Mississippian in age. Units 1 to 3 comprise the Besa River Formation in the claim groups area. The Besa River Formation is underlain by the Ordovician-to-Silurian black limestones, chert and graptolitic shale of the Road River Formation in the claim groups area. Rocks of the Road River Formation are not exposed on the claim groups, although they are exposed nearby. The Besa River Formation is overlain by

the siltstones and fine-grained sandstones of Unit 4, which comprise the Devonian-Mississippian Imperial Group in the area. Cretaceous hornblende-biotite granodiorite has intruded the succession immediately to the north-east of the claim group.

The characteristics of Units 1 to 4 on the claim groups are as follows:

(i) Unit 4

Unit 4 is comprised of siltstone and silty, fine-grained sandstone. Four distinct members occur within Unit 4; the members may, in part, be equivalent laterally after facies changes.

Member 4(d) is made up of dark grey to rusty weathering dark grey siliceous siltstone; minor amounts of fine-grained pyrite and pyrrhotite are present in some places. Rocks of member 4(d) are very slightly magnetic and account for the anomalous readings taken during the magnetometer survey. An assay of a sample of 4(d) rock gave only 14 and 13 ppm Pb and Zn respectively. Rocks of member 4(d) may be contact metamorphic equivalents of member 4(c). Metamorphism may have been caused by the adjacent Cretaceous hornblende-biotite-granodiorite pluton.

Member 4(c) is made up of grey to light brown weathering dark grey siltstone. Light and dark interbeds and cross and parallel laminations are visible on weathered surfaces but not on fresh surfaces. Samples of 4(c) rock have Pb and Zn values similar to those of Unit 4(d). Rocks of Unit 4(c) may be laterally equivalent to those of Unit 4(a) after a facies change.

Member 4(b) is made up of light grey to brown weathering siltstone and fine-grained sandstone. Poorly developed stratification is visible on some weathered surfaces. Euhedral pyrite crystals up to ¼" across are present in some areas. The rock is slightly calcareous in part.

Member 4(a) consists of siltstone and sandy siltstone similar to that of member 4(b), with interbeds of grey shale. Samples of rock from members 4(a) and (b) average approximately 15 and 75 ppm of lead and zinc respec-

tively.

(ii) Unit 3

Unit 3 is comprised of grey weathering black shale and argillite with minor amounts of dark cherty argillite, baritic shale, pyritiferous shale and bedded barite. The black shale is commonly carbonaceous to graphitic and, in places, is pyritic.

Member 3(e) is made up of grey weathering pyritic black shale which is carbonaceous and, in places, graphitic. Member 3(e) occurs at various stratigraphic levels within Unit 3. Assays of rock of member 3(e) average approximately 20 and 30 ppm lead and zinc respectively.

Member 3(d) is made up of finely interlaminated white calcite and pale grey baritocalcite or barite. The member lies within rocks of member 3(c). It apparently has a restricted lateral extent and does not exceed 15 feet in thickness. This unit occurs approximately 150 feet south of the southern boundary of claim BASIN 16.

Member 3(c) is made up of black shale which is in part carbonaceous and in part pyritic and which has rare to abundant tiny discontinuous lenses or blebs of barite along bedding surfaces. Two horizons of member 3(c), the spotted barite horizon, occur within Unit 3(c). In the area of the TOM and JASON occurrences, up to four such horizons occur above the mineralization at between 750 and 1,400 feet above the base of Unit 3. In that area, Unit 3 ranges up to 4,000 feet in thickness. On the claim groups, the spotted barite horizons lie between 250 and 440 feet above the base of the unit, which is approximately 575 feet thick. Assays of rocks of Unit 3(c) show that it contains up to 18.2% barium but has a low base metal content. Lead and zinc assays of rocks of Unit 3(c) average approximately 10 and 20 ppm respectively. A thin section of this unit describes the rock as being a "black, very fine-grained carbonaceous shale with abundant conspicuous lenses and lamellae of barite. The shaley part of the rock contains a fair number of sericitized euhedral porphyroblasts which may represent an altered aluminosilicate such as andalusite."

Member 3(b) is made up of dark grey weathering dark grey to black cherty shale to chert. It is found associated with member 3(c), the spotted barite, and is not extensively developed within Unit 3. Assays of rock of member 3(b) average 5 and 15 ppm lead and zinc respectively.

Member 3(a) is made up of grey weathering carbonaceous to occasionally graphitic black shale. No internal sedimentary structures are visible on the weathered surface of the rock. Assays of rocks of member 3(a) average approximately 10 and 5 ppm lead and zinc respectively.

(iii) Unit 2

Unit 2 is a distinctive polymictic orthoconglomerate. The majority of the clasts are of pebble size and of chert, argillite, siltstone and sandstone. The pebbles are closely packed and are cemented by a dark grey siliceous matrix. No internal stratification was seen within the rocks of Unit 2. The thickness of the unit varies considerably in the area surrounding the claim groups. In some places it is absent entirely, while in others it is up to 150 feet thick. Minor pyrite was observed in the conglomerate matrix.

(iv) Unit 1

Unit 1 is made up of a thick succession of silty shale with interbedded argillite to siltstone and black carbonaceous and occasionally pyritic shales. Parallel laminations show well on weathered surfaces of rocks of Unit 1 but are difficult or impossible to see on fresh surfaces.

Member 1(b) is made up of dark grey to brown weathering silty shale with interbedded argillite and siltstone. The appearance of well-developed parallel laminations on weathered surfaces of the rock has led to its being called a "rhythmite". Assay values for rocks of member 1(b) average approximately 10 and 75 ppm of lead and zinc respectively.

Member 1(a) is made up of grey weathering black, carbonaceous to graphitic shale. In some places, abundant fine-grained pyrite is present.

Well-developed, very fine, parallel laminations are visible on weathered surfaces of rock of member 1(b) but not on fresh surfaces. Assay values for rocks of member 1(a) average approximately 15 and 150 ppm of lead and zinc respectively.

(b) Structure

The claim groups are underlain by a succession of Paleozoic sedimentary rocks striking northwest and dipping at about 45° away from the centre of the groups in an antiform. The South Macmillan River flows along the anticlinal valley developed in the area. A boundary fault marking the northeastern margin of a graben developed during the deposition of the Paleozoic sedimentary rocks may underlie the river valley. A series of anticlines and synclines parallel to the aforementioned antiform occur to the southwest of the claim groups. A gentle, northeast trending syncline and accompanying minor deformation have been imposed on the northwest trending folds.

Late east-west trending faults have produced apparent lateral displacement up to 1,500 feet in the stratigraphy, as evidenced on Map Sheet G-8 (in back pocket).

(c) Mineralization

Mineralization in the claim groups area occurs at two levels within the stratigraphic succession. The MOOSE barite deposit, which lies to the southwest of the claim group, occurs within rocks of Unit 1. The TOM and JASON lead-zinc-silver deposits and the TEA barite deposit occur within rocks of Unit 3. No lead, zinc or silver mineralization was found on the claim group, although barite was found to be present immediately south of claim BASIN 16.

RECOMMENDATIONS

Stratigraphy, containing spotted and massive barite, has been located which is interpreted to be equivalent to and at the same stratigraphic level as TOM-JASON barite which hosts and overlies Pb-Zn-Ag mineralization. No lead, zinc or silver mineralization was found on the FETCH, HASTEN and BASIN claim groups. The folded equivalent of this barite horizon, possibly containing Pb-Zn-Ag, may exist in the overburden-covered central valley of the claim groups. Results of a magnetometer survey has proven negative as no magnetic components exist to distinguish between stratigraphic units or structural trends in overburden- or talus-covered areas.

Recommended further exploration will consist of a soil sampling survey in overburden-covered areas and vertical and horizontal loop electromagnetic surveys to be completed before the conclusion of the 1977 field season.

Respectfully submitted,
CANADIAN NICKEL COMPANY LIMITED.



Edward J. Debicki,
District Geologist, NW Canada.

Dated: October 3, 1977.

A P P E N D I C E S



APPENDIX 1 - PERSONNEL

Personnel employed during the course of this work:


E. J. Debicki	41 Ketz Road, Whitehorse, Yukon. Y1A 3V3
W. O. Manson	Box 1135, Copper Cliff, Ontario. POM 1N0
R. L. Debicki	41 Ketz Road, Whitehorse, Yukon. Y1A 3V3
K. Baldry	1121 Terra Court, Port Coquitlam, B.C. V3B 4Z9
M. Greer	P.O. Box 5033, Whitehorse, Yukon.
I. McCaskill	c/o Canadian Nickel Company Limited, Copper Cliff, Ontario. POM 1N0

APPENDIX 2 - CERTIFICATE OF QUALIFICATIONS

I, EDWARD J. DEBICKI, of the City of Whitehorse, in the Yukon Territory,
HEREBY CERTIFY:

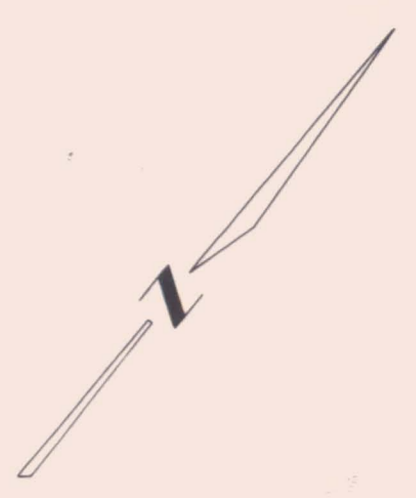
1. THAT I reside at 41 Ketz Road, Whitehorse, Yukon Territory, Y1A 3V3;
2. THAT I am a graduate of McMaster University with a degree of Bachelor of Science (1971);
3. THAT I am District Geologist, Northwestern Canada, with Canadian Nickel Company (subsidiary of Inco Metals Company) of Copper Cliff, Ontario, POM 1N0;
4. THAT I have practised my profession as a geologist for six (6) years, having worked in Ontario, Quebec, Northwest Territories and Yukon;
5. THAT I visited the property discussed in this report and that the work described in this report was carried out under my supervision;
6. THAT I am an Associate Member of the Geological Association of Canada.

DATED at Whitehorse, Yukon Territory, this 3rd day of October, 1977.


Edward J. Debicki

M A P S

19000 N

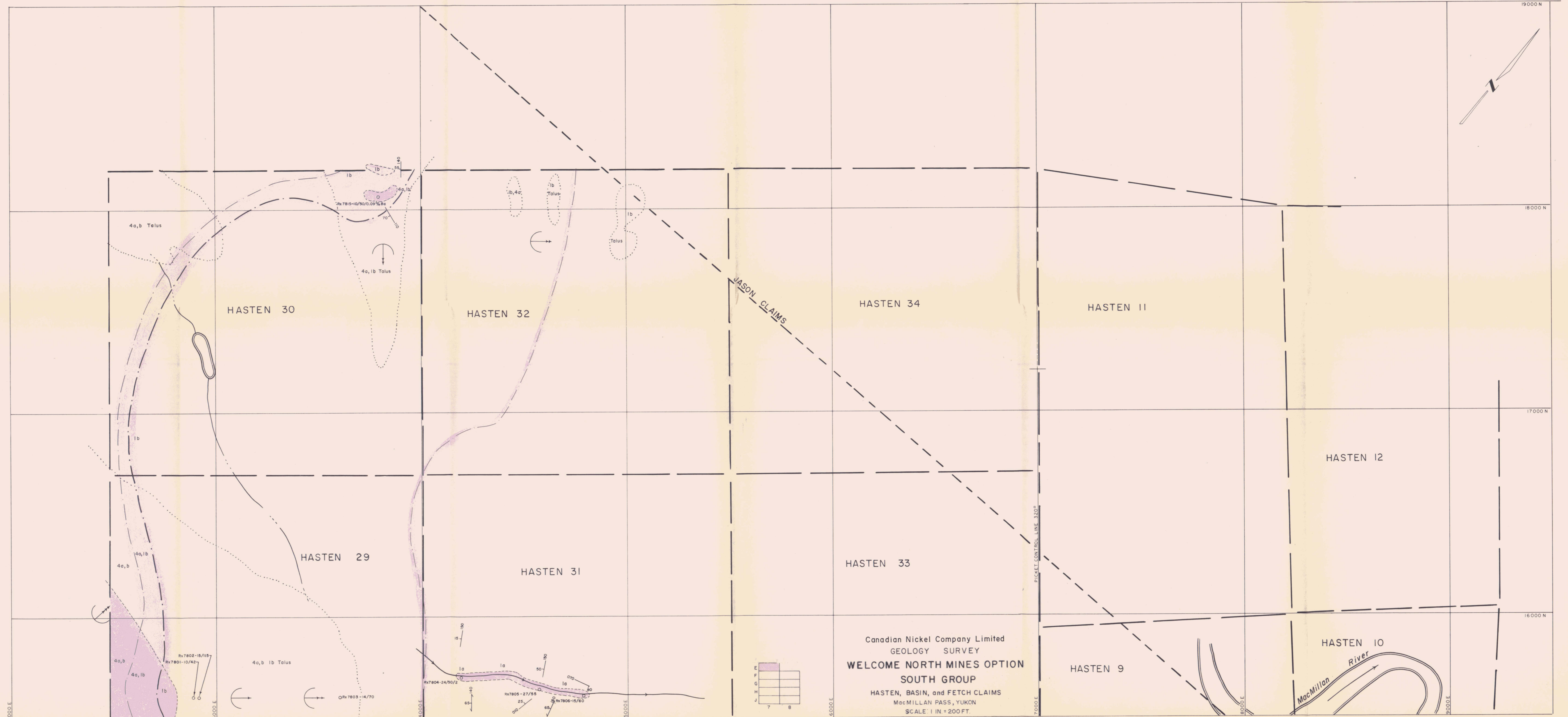


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17000 N

16000 N

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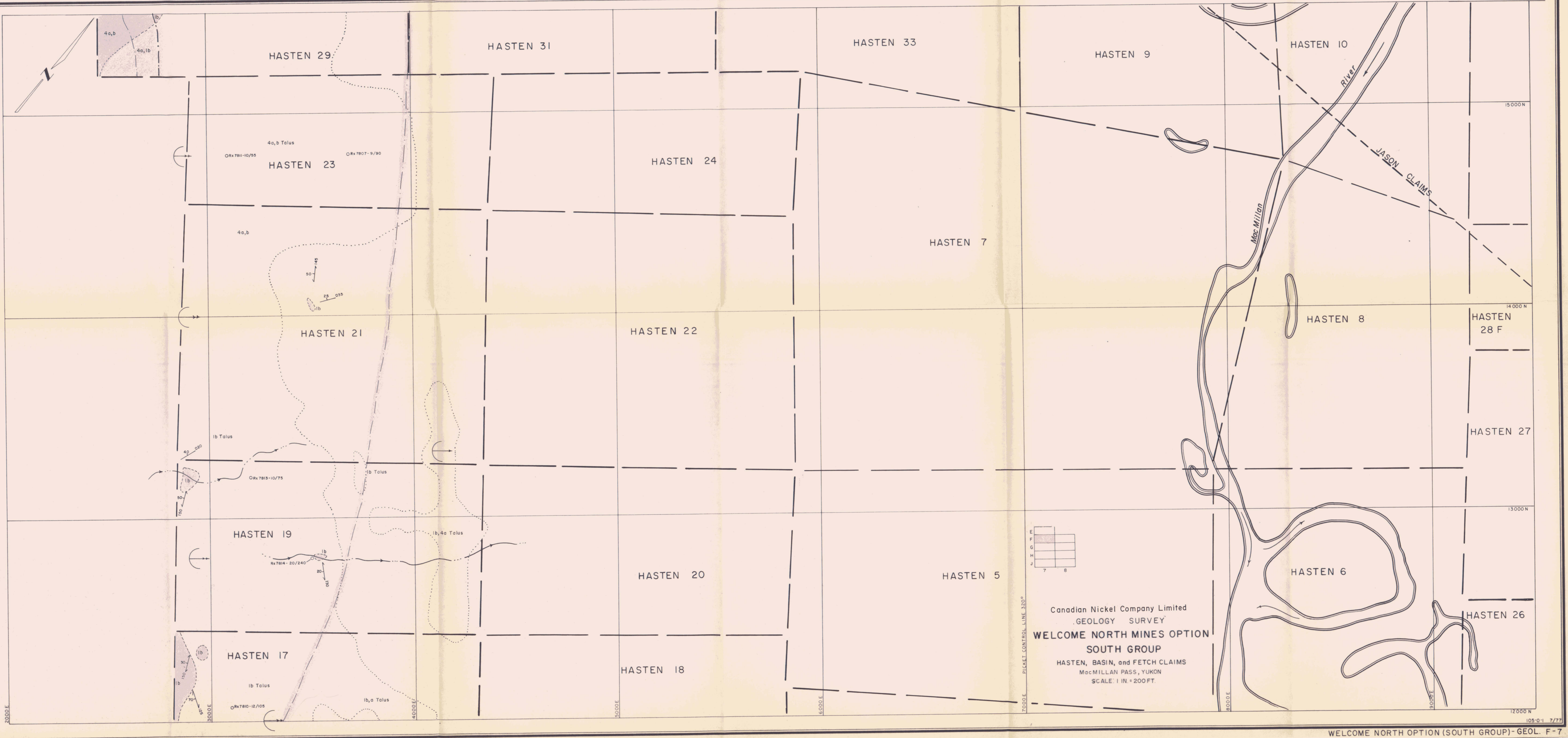


JASON CLAIMS

PICKET CONTROL LINE 320°

Canadian Nickel Company Limited
 GEOLOGY SURVEY
WELCOME NORTH MINES OPTION
 SOUTH GROUP
 HASTEN, BASIN, and FETCH CLAIMS
 MacMILLAN PASS, YUKON
 SCALE: 1 IN. = 200 FT.

E	
F	
G	
H	
J	
7	8



HASTEN 29

HASTEN 31

HASTEN 33

HASTEN 9

HASTEN 10

4a,b Talus

HASTEN 23

HASTEN 24

HASTEN 7

4a,b

HASTEN 21

HASTEN 22

HASTEN 8

HASTEN 28 F

1b Talus

HASTEN 19

1b Talus

HASTEN 20

HASTEN 5

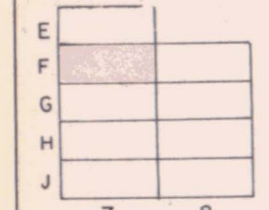
HASTEN 6

HASTEN 27

HASTEN 17

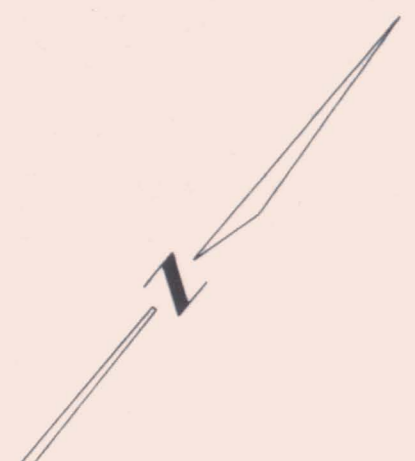
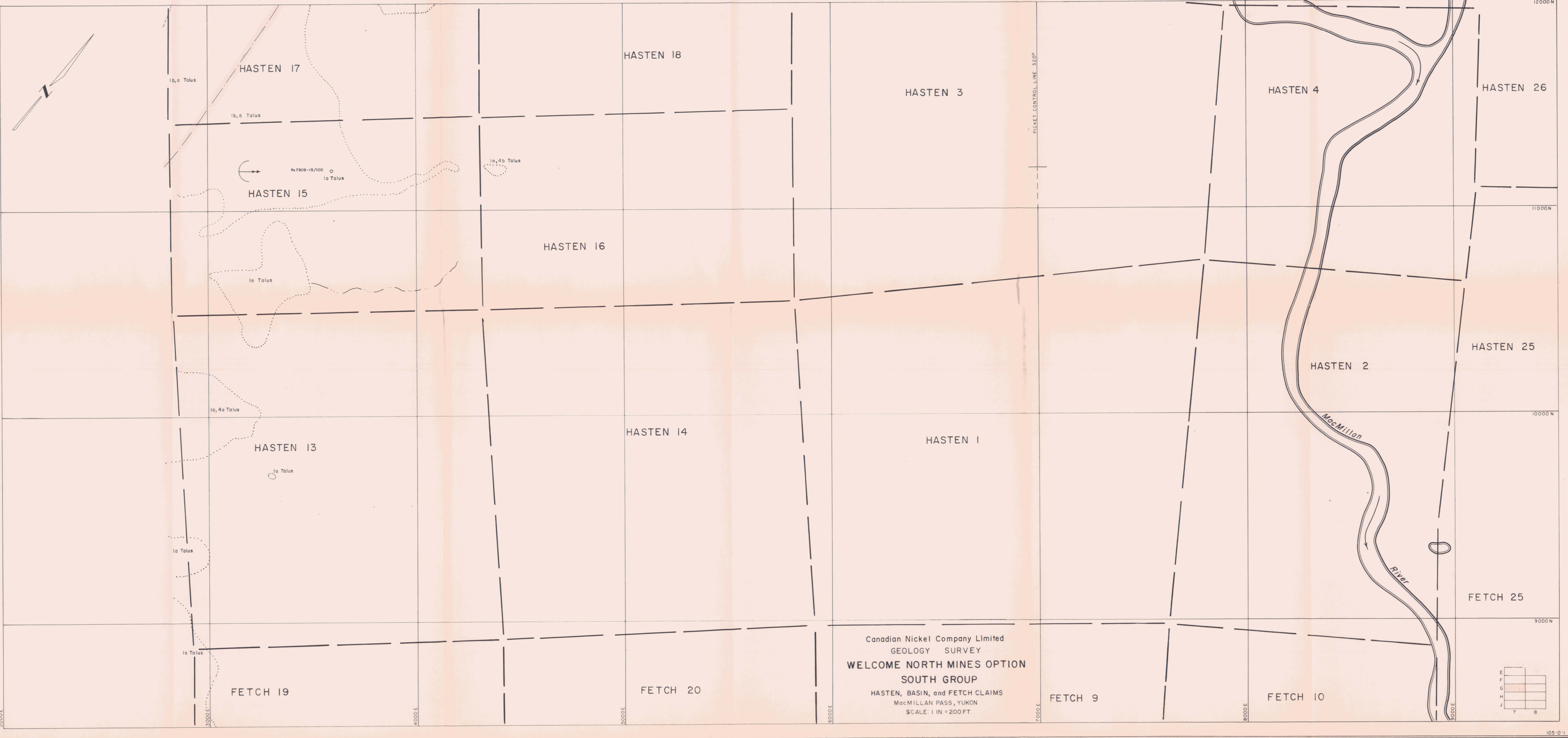
1b Talus

HASTEN 18



Canadian Nickel Company Limited
 GEOLOGY SURVEY
WELCOME NORTH MINES OPTION
SOUTH GROUP
 HASTEN, BASIN, and FETCH CLAIMS
 MacMILLAN PASS, YUKON
 SCALE: 1 IN. = 200 FT.

HASTEN 26



1b,a Talus

1b,a Talus



Rx 7809-15/100
1a Talus

1a,4b Talus

1a Talus

1a,4a Talus

1a Talus

1a Talus

1a Talus

PICKET CONTROL LINE 320°

Canadian Nickel Company Limited
GEOLOGY SURVEY
WELCOME NORTH MINES OPTION
SOUTH GROUP
HASTEN, BASIN, and FETCH CLAIMS
MacMILLAN PASS, YUKON
SCALE: 1 IN. = 200 FT.

E	
F	
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H	
J	
	7 8

2000E

3000E

4000E

5000E

6000E

7000E

8000E

9000E

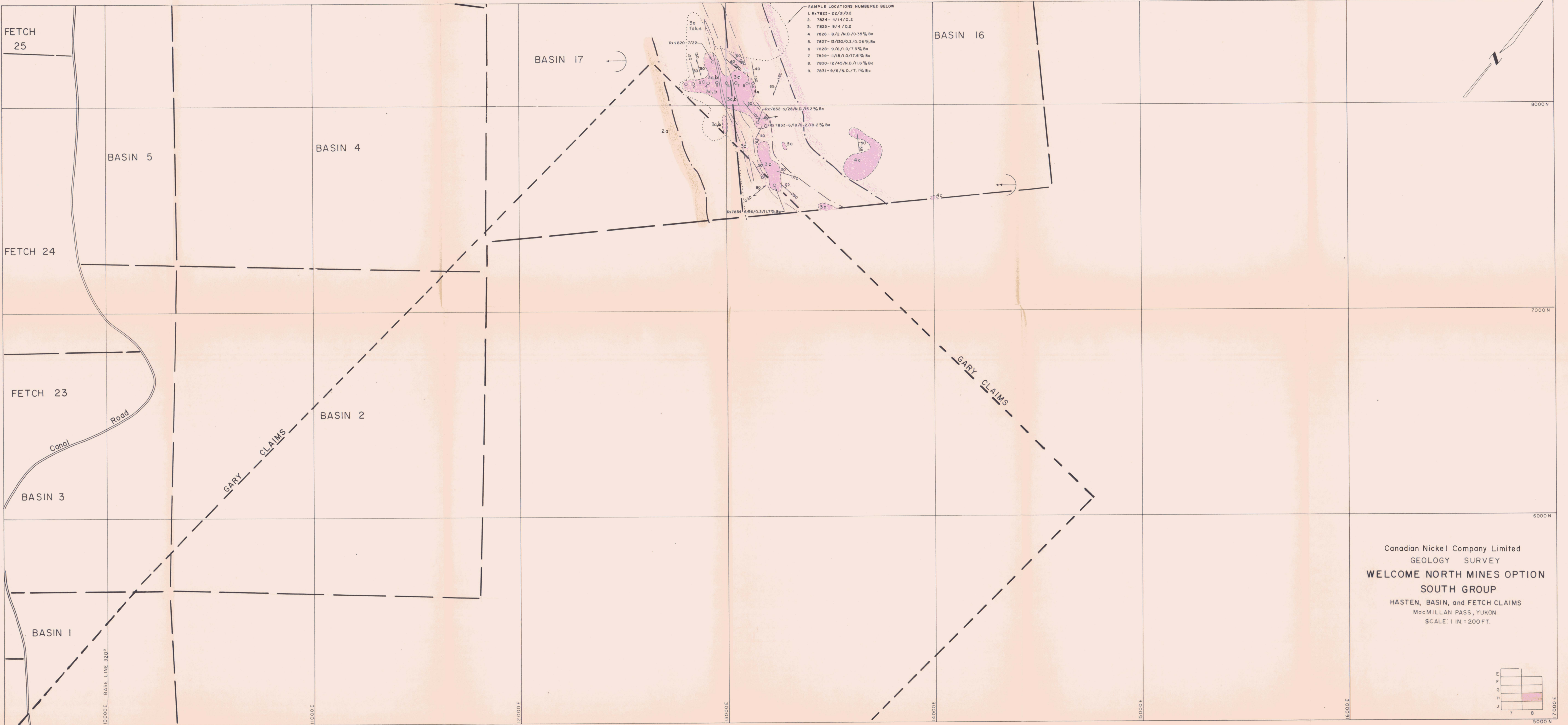


LEGEND

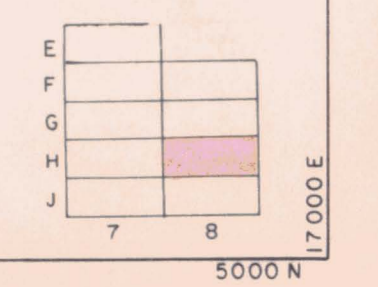
- CRETACEOUS INTRUSIVE ROCKS
 - 5a. Hornblende-biotite granodiorite. Medium grained, minor pyrite present.
- DEVONIAN AND MISSISSIPPIAN FINE GRAINED CLASTIC ROCKS
 - 4d. Dark grey siltstone. Weathers dark grey to rusty. Minor pyrite and pyrrhotite present in some places. May be contact metamorphosed equivalent of unit 4c.
 - 4c. Dark grey siltstone. Weathers grey to light brown, to show light and dark interbeds and cross laminations. May be stratigraphic equivalent of 4a after facies change.
 - 4b. Siltstone, in part sandy. Weathers light brown to grey. In part pyritic and/or limonitic. Calcereous.
 - 4a. Siltstone, in part sandy. Minor interbeds grey shale. Weathers light brown to grey. In part pyritic and/or limonitic.
- DEVONIAN AND MISSISSIPPIAN SHALE AND BARITE
 - 3e. Black fissile shale, grey weathering in places carbonaceous to occasionally graphitic. Pyritic. The members of unit 3 are interbedded. Members 3a and 3e occur throughout the unit. Members 3b, 3c, and 3d occur near the base of the unit.
 - 3d. Bedded barite, calcite, and baritocalcite. White to light grey (NOT EXPOSED ON CLAIMS)
 - 3c. Black shale, in part carbonaceous. Discontinuous, spotty lenses of barite. In part, pyritic.
 - 3b. Black cherty shale to chert. Dark grey weathering.
 - 3a. Black fissile shale, grey weathering. In places carbonaceous to occasionally graphitic.
- DEVONIAN AND MISSISSIPPIAN CONGLOMERATE
 - 2a. Polymictic conglomerate, most pebbles of grey to dark grey chert, in finer grained cherty or silty matrix.
- DEVONIAN AND MISSISSIPPIAN SHALE AND ARGILLITE
 - 1b. Silty shale interbedded with argillite to siltstone. Dark grey to brown weathering
 - 1a. Black fissile shale, grey weathering. In places carboniferous to graphitic. Gas pockets. In places pyritic.
- Geological Contact - Defined, Inferred
- Formation Contact - Defined, Inferred
- Outcrop
- Talus - Overburden Boundary
- Strike and Dip of Bedding - Inclined, Overtumed
- Jointing - Vertical, Inclined
- Foliation - Vertical, Inclined
- Sample Location and Rx Number. Results-Pb/Zn/Ag - Ba as Noted (all results in p.p.m.)
- Creek
- Intermittent Creek
- Limonitic Seeps
- Slope - Gentle, Moderate, Steep
- Canadian Nickel Company, Limited
- GEOLOGY SURVEY
- Fault
- Drag Fold, plunge

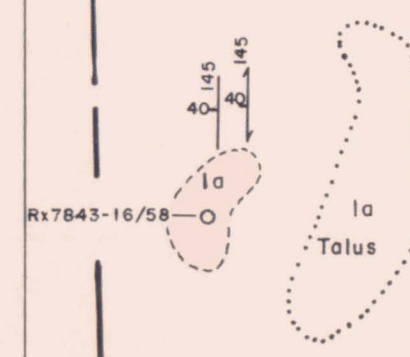
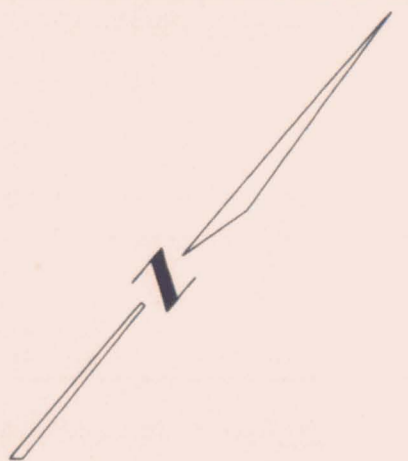
**WELCOME NORTH MINES OPTION
SOUTH GROUP**
HASTEN, BASIN, and FETCH CLAIMS
MacMILLAN PASS, YUKON
SCALE: 1 IN. = 200 FT.





Canadian Nickel Company Limited
 GEOLOGY SURVEY
WELCOME NORTH MINES OPTION
SOUTH GROUP
 HASTEN, BASIN, and FETCH CLAIMS
 MacMILLAN PASS, YUKON
 SCALE: 1 IN. = 200 FT.





FETCH 13

FETCH 14

FETCH 3

FETCH 4

FETCH 22

FETCH 11

NO OUTCROPS, NO TALUS.
AREA UNDERLAIN BY GLACIAL DRIFT
INCLUDING BOULDERS OF 4a, 2a, 1a

FETCH 12

FETCH 1

FETCH 2

GARY CLAIMS

FETCH 21



5000N
4000N
3000N
2000N
2000E
3000E
4000E
5000E
6000E
7000E
8000E
9000E

Canadian Nickel Company Limited
GEOLOGY SURVEY
WELCOME NORTH MINES OPTION
SOUTH GROUP
HASTEN, BASIN, and FETCH CLAIMS
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SCALE 1 IN. = 200 FT.

