

GEOLOGICAL SURVEY REPORT

on the

BASIN 25-26 MINERAL CLAIMS

Macmillan Pass Area

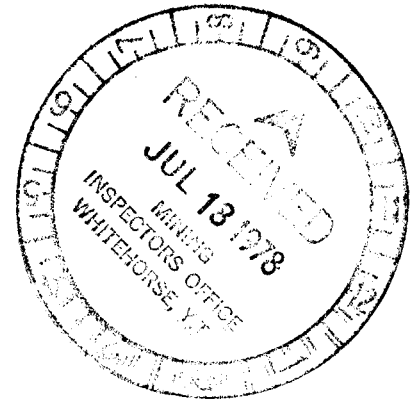
Watson Lake Mining District

Yukon Territory

Longitude:  $130^{\circ}12'W$

Latitude:  $63^{\circ}06'N$

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



by

Edward J. Debicki

District Geologist, Northwestern Canada

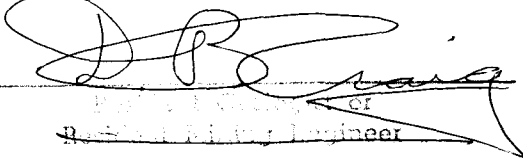
CANADIAN NICKEL COMPANY LIMITED

July 27/28, September 2, 1977

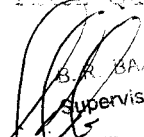
090361

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representative work in the amount of

\$300.00

  
\_\_\_\_\_  
Responsible Engineer

Considered as representative work under Section 50 (1) Yukon Quartz Mining Act.

  
S. R. BAILEY  
Supervising Mining Recorder


  
\_\_\_\_\_  
Commissioner of Yukon Territory

TABLE OF CONTENTS

	<u>Page Number</u>
Summary	1
Introduction	2
Location and Access	2
Topography and Climate	3
Claims Covered	3
General Geology	4
Geology of the BASIN 25 and 26 Claim Group:	
(a) Stratigraphy	5
(i) Unit 5	6
(ii) Unit 4	6
(iii) Unit 3	7
(b) Structure	8
(c) Mineralization	8
Recommendations	9

~~Appendices~~

~~Appendix 1 - Personnel (a)~~

~~Appendix 2 - Certificate of Qualifications (b)~~

Maps

Claim Location Map - Scale: 1" = 65 miles

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

Back Pocket

Geology Survey and Legend - Sheet H-8 - Scale: 1" = 200'

## SUMMARY

The BASIN 25 and 26 claim group was staked by Canadian Nickel Company Limited in July 1977 as part of the BASIN claim group held under option from Welcome North Mines Ltd. (N.P.L.) Geological mapping and sampling indicates an east-west striking sequence of Mississippian-Devonian Besa River Formation black shales and barite to baritocalcite overlain by Imperial Group siltstone. Dips are  $30^{\circ}$  to  $50^{\circ}$  to the north. A granodiorite intrudes the northeastern portion of the claim group.

Barite and baritocalcite up to 15 feet thick assays 53.2% barium with negligible Pb-Zn-Ag. The unit is interpreted to be equivalent to spotted barite horizons of the JASON and TOM claim groups lying to the north and northeast. Massive barite-hosted Pb-Zn-Ag horizons lying below the spotted barite horizons on those properties do not occur (outcrop) on the BASIN 25 and 26 claim group.

The economic potential of BASIN 25 and 26 is considered negligible and no further work is recommended, at this time.

## INTRODUCTION

The BASIN 25 and 26 claims were staked by Canadian Nickel Company Limited during July, 1977. The two claims form part of the FETCH, HASTEN and BASIN claim groups, now totalling 85 claims, covered by an option agreement with Welcome North Mines Ltd. (N.P.L.) The BASIN claims are adjacent to and south of the JASON claim group, held by Ogilvie Joint Venture, where drill intersections of Pb-Zn-Ag have been reported.

Work covered by this report consisted of geological mapping and sampling.

## LOCATION AND ACCESS

The BASIN 25 and 26 claims are situated in the Watson Lake Mining District, Yukon Territory. The claim group lies within N.T.S. area 105-0-1 at  $130^{\circ}12'W$  longitude and  $63^{\circ}06'N$  latitude. Ross River, Yukon Territory, is located approximately 105 air miles to the southwest of the claim group.

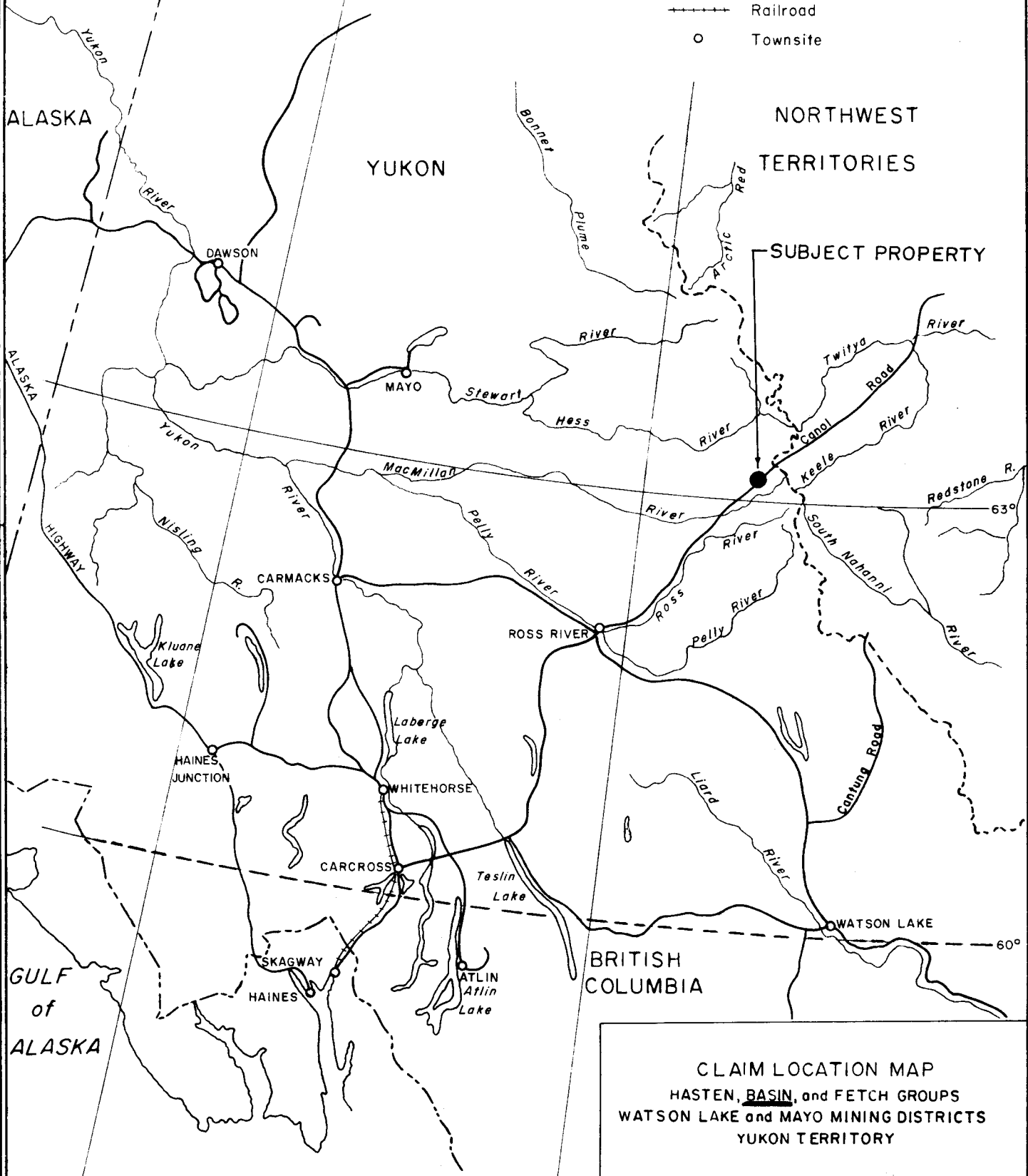
Access to the claim group is by way of the North Canal Road (summer traffic only) from Ross River, Yukon. The road occurs approximately one mile west of the BASIN 25 and 26 claims. Access to the claims is by foot or by helicopter.

A base camp was situated on claim FETCH 21 (YA 15167) 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

138°

132°

7/77

FIGURE 1

TOPOGRAPHY AND CLIMATE

The claim group is situated within the Hess Mountains region of the Selwyn Mountains. The elevation difference between the claim group and the North Canal Road is approximately 1400 feet, with the highest point approximately 5650 feet above sea level. All areas of the claim group 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.

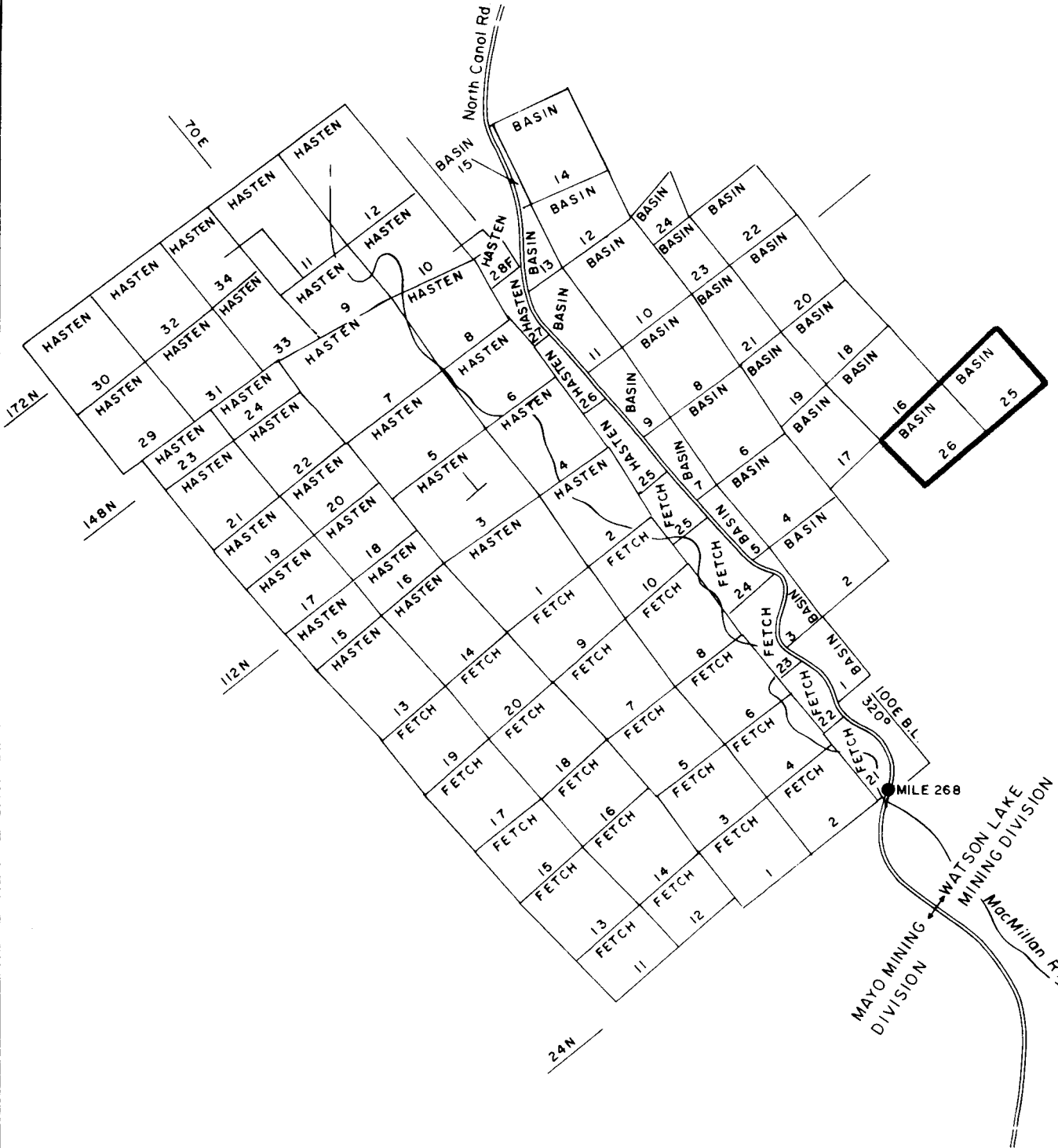
The tree line on the claim group is approximately 4500 feet above sea level. Below the tree line, the area is forested by fir, black spruce, willow and arctic black birch. Mosses and lichens cover much of the claim group above the tree line.

CLAIMS COVERED

<u>Claim</u>	<u>Record Numbers</u>	<u>Date Recorded</u>
BASIN 25-26	YA 21477 - YA 21478	July 26, 1977

Total: 2 claims.

Both claims lie within the Watson Lake Mining District, Yukon Territory. All work was performed by personnel of Canadian Nickel Company Limited. The BASIN 25 and 26 claims are presently held by Canadian Nickel Company Limited.



CLAIM MAP  
**WELCOME NORTH OPTION  
SOUTH GROUP**  
HASTEN, BASIN, and FETCH GROUPS  
WATSON LAKE-MAYO MINING DIVISIONS  
YUKON TERRITORY

2640 0 1320 2640 FT.

1" = 2640'

105-0-1 7/77

FIGURE 2

## GENERAL GEOLOGY

The geology of the area is covered by G.S.C. Open File 205, "Niddery 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 BASIN 25 and 26 CLAIM GROUP

(a) Stratigraphy

A generalized stratigraphic section is given below. The stratigraphy is more specifically defined in the Legend on Sheet H-8 (back pocket of this report).

CRETACEOUS	Unit 5:	Hornblende-biotite granodiorite.
<hr/>		
	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.  (A lower-most massive barite horizon hosting TOM and JASON Pb-Zn-Ag mineralization does not outcrop on the claim group.)
	Unit 2:	Polymictic conglomerate, with the majority of pebbles of chert. Grain size, percentage 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.
<hr/>		
ORDOVICIAN-SILURIAN (Road River Formation)		Black limestones, chert and graptolitic shales.

Note that only Units 3, 4 and 5 are exposed on the BASIN 25 and 26 claim group.

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 group area. The Besa River Formation is underlain by the Ordovician-to-Silurian black limestones, chert and graptolitic shale of the Road River Formation claim group. 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 and is exposed on BASIN 25.

The characteristics of Units 3, 4 and 5 exposed on the claim group are as follows:

(i) Unit 5

Unit 5(a) is a medium-grained hornblende-biotite granite with minor pyrite.

(ii) 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 silt-

stone. 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  $\frac{1}{4}$ " 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 respectively.

(iii) 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 on BASIN 26.

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 BASIN 16 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.

(b) Structure

The BASIN 25 and 26 claim group is underlain by a succession of Paleozoic sedimentary rocks striking west and dipping from 30° to 50° north on the north-east limb of an anticline. A granodiorite intrusion in the northeastern portion of BASIN 25 has imparted metamorphic effects to adjacent rocks of Unit 4(c). Foliation on the claim group trends north-south and dips 60° west.

(c) Mineralization

Barite, calcite and baritocalcite within Unit 3(d) average in thickness

to about 15 feet and assay up to 53.2% Ba.

Lead, zinc and Ag values are negligible.

Traces of pyrite were noted in Unit 4(c).

#### RECOMMENDATIONS

Stratigraphy, containing barite and baritocalcite with negligible Pb-Zn-Ag, has been located which is interpreted to be equivalent to spotted barite horizons occurring stratigraphically above horizons of barite-hosted Pb-Zn-Ag mineralization on the TOM and JASON claim groups to the northeast and north, respectively. The TOM-JASON barite-hosted Pb-Zn-Ag horizon equivalent does not occur on the BASIN 25 and 26 claim group; therefore, the economic potential of the claim group is considered minimal.

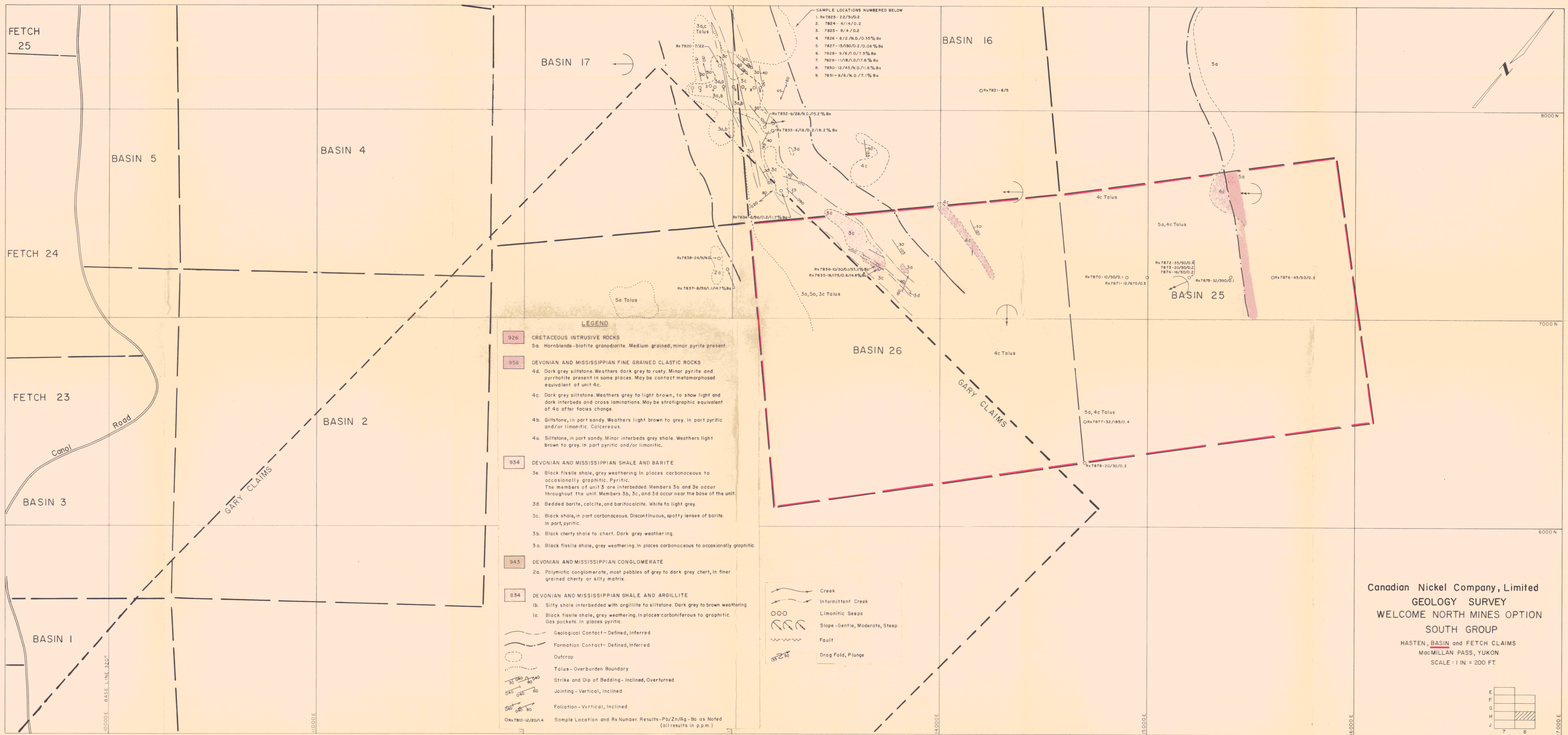
No further work is recommended for the BASIN 25 and 26 claim group at this time.

Respectfully submitted,  
CANADIAN NICKEL COMPANY LIMITED.



E. J. Debicki,  
District Geologist, NW Canada.

Dated: June 27, 1978.



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.

