5465

5465

93M/6W

CANADIAN NICKEL COMPANY LIMITED

GEOLOGICAL AND GEOCHEMICAL SURVEYS

CONDUCTED ON NATLAN CLAIMS

GROUPS A AND B

93M/6W

NATLAN 1-52

OMINECA MINING DIVISION

LONG. 127°18'W; LAT. 55°25'N

93M/6W

M. J. Gidluck
November 1974.

CONTENTS

NATLAN CLAIMS GROUPS A AND B

GENERAL

The work done on the claims subsequent to staking and herein claimed for assessment credit consists solely of a program of geological mapping and combined lithochemical sampling done during the period of July 28th. to August 27th., 1974. The field work was carried out by Geologist J. Iriarte, employed for the summer by the Canadian Nickel Co. Ltd. (Canico), and an assistant, under the supervision of Area Geologist M. J. Gidluck (Inco).

The program was conducted from a fly camp established on the property and supported by a contract Jet Ranger helicopter based at the Canico main camp at Bear Lake, 60 miles north of the Natlan Claims. Total helicopter time involved in the program is abnormally high due to several periods of inclement weather experienced during the month when the crew had to be removed from the mountain fly camp.

The compilation of the data and preparation of the report was done at the Canadian Nickel Company Exploration Office in Copper Cliff, Ontario.

EXPENDITURES

Aircraft Support	Dominion-Pegasus Jet Ranger helicopter			
	July 4.8 hrs.			
	Aug. 23.5 hrs.			
	28.3 hrs. @ $235.00 (includes fuel)			6,650.50 ✓
Assays	Bondar Clegg and Co. Ltd. - Vancouver			
	281 analyses @ $2.55		716.55	
	Shipping samples by Greyhound bus		83.00	
				799.55 ✓
Salaries	Inco - Canico Personnel - includes benefits			
	Geologist J. Iriarte	31 days @ $42.10	1,305.10	
	Assistant R. Lamour	14 days @ $47.71	667.94	
	Assistant J. Keir	17 days @ $39.62	673.54	
	Area Geologist M.J. Gidluck	6 days @ $90.81	544.86	
				3,191.44 ✓
Supplies	Groceries - Super Valu - Smithers			
	60 man days @ $6.00/day		360.00	
	Photo Enlargement - Pacific Survey Corp.			
	Photo		95.00	
	Film positive		12.00	
	Dispatching - Overland Expediting Smithers		200.00	
				667.00 ✓
Report	Salaries - draftsman, geologist, typist		475.00	
	Materials		25.00	
				500.00 ✓
			TOTAL COSTS	11,808.49 ✓

TOTAL WORK CREDITS APPLIED FOR 59 CLAIM YEARS.

CLAIMS

The 52 Natlan claims were pegged by the Canadian Nickel Co. Ltd. in 1974 after earlier reconnaissance exploration had indicated the presence of wide spread mineralization in a "granitic" stock. The first 12 claims were staked in June 1974 and the remaining 40 claims staked in August 1974.

	Record No.'s	Staked	Recorded
Natlan # 1 - #12	130541 - 130552	June 5, 1974	June 10, 1974
Natlan #13 - #18	131110 - 131115	August 8, 1974	September 6, 1974
Natlan #19 - #52	131116 - 131149	August 9, 1974	September 6, 1974

LOCATION AND TOPOGRAPHY

The claims are located 16 miles northeast of New Hazelton on the western slopes of Natlan Peak in the Babine Mountain Range - 93M/6W.

The topography in the area is very steep with a series of sharp ridge scarps comprising the highs between wooded alpine valleys. One such valley cross-cuts the southwest corner of the claim group. The main zones of interest occur on the ridge east of this valley, well above tree line and at about 5800 ft. above sea level.

A new B.C. Forest Service road following Natlan Creek passes the claims about 4 miles to the east, however, access to the property is still attained by helicopter.

REGIONAL GEOLOGY

The Natlan acid intrusive body is one of many "granitic" stocks and plutons occurring in the Skeena Arch of the Intermontane Tectonic Belt. The stock, subject of this report, is situated within Upper Jurrasic to Lower Cretaceous Bowser Basin sediments, mainly sandstones, siltstones and greywackes which have been locally "warped up" by the underlying intrusive. The enclosing sediments dip away from the stock on all sides and appear to form a shallow cover over its southern margin suggesting a possible southerly plunge to the intrusive body. It would appear that we may be dealing with the upper-most portion or roof of an underlying pluton.

Regional mapping to the north (B.C. Dept. of Mines, Map 69-1, Carter and Kirkham) indicates an anticlinal structure in the sediments immediately on strike and 8 miles to the northwest.

DETAIL GEOLOGY

Procedure

The geological mapping and lithochemical sampling program carried out by Iriarte utilized an air-photo enlargement (1000 ft. per inch scale) as a base for field location control and plotting purposes. Close spaced traverses were conducted over all areas of outcrop exposure within the intrusive body as well as the peripheral host rocks.

Composite rock chip samples were taken as frequently as 200 to 300 ft. apart over the major zones of interest. A total of 281 samples from the claims were sent to the Bondar-Clegg and Co. Ltd. laboratory in Vancouver for semi-quantitative analysis. After pulverizing the chips to minus 100 mesh fraction the pulp was attacked first with concentrated nitric acid and then by the addition of concentrated hydrochloric acid. After 3 hours of digestion the solutions were bulked to 20% acid concentration, homogenized, settled and analysed by atomic absorption of copper, molybdenum and zinc.

Intrusive

The majority of the sampling was done on a north-south aligned, oval shaped acid intrusive stock approximately 11,500 ft. in length by 6,500 ft. in width. The stock is composed solely of a homogeneous relatively fresh monzonite phase weakly porphyritic in some areas.

Only minor variation occurs within the body in the form of a variable total quartz content and changing hornblende to biotite ratio. The porphyritic specimens exhibit closely packed phenocrysts of medium sized plagioclase crystals, large biotite phenocrysts and small hornblende grains in a quartzo-feldspathic matrix.

The total quartz content increases to a "quartz monzonite" classification (greater than 10%) in some areas near the metasediment contact, e.g. northeast and southeast margins of the body. The normal hornblende to biotite ratio is approximately 3:1 but near the central eastern intrusive contact this ratio drops to about 1:1 where well developed books of biotite are formed.

An average composition of the stock is in the order of 50% plagioclase, 20 - 25% k-feldspar, 5 - 15% quartz, 10 - 15% hornblende, 5 - 10% biotite and 1 - 5% opaques (magnetite and sulphides).

A vertical section of almost 2000 ft. into the stock is revealed by a stream valley transecting the body in a northwest direction. However, because of the abundant overburden and vegetation cover along the valley walls and floor, very little outcrop exposure was available for sampling at the lower elevations. Those few outcrops which were sampled in the valley indicated no apparent change in the composition of the monzonite with depth.

The stock is moderately fractured with the intensity increasing towards the contacts, especially along the eastern margin. This may be partially a result of the steepening topography. Although essentially multi-directional the more prominent fracturing tends to vary between a 0° and 40° azimuth with near vertical dip. A secondary trend of steep fracturing ranges between a strike of 120° and 160°.

Quartz veining is also prevalent along the eastern contact zone but at best it would only approach weak stockworks within the monzonite unit. An average thickness of the veins is approximately 1 inch.

Metasediments

The host rock to the intrusive is a sequence of moderately dipping, 50 to 70 degrees, fine to medium grained siltstones and greywackes. Locally the sediments dip away from the plug on all sides at a variety of angles.

Within several hundred feet of the intrusive the sediments show some signs of partial metamorphism approaching a hornfelsic texture. Evidence of stratification disappears and in thin-section, random small fresh plagioclase feldspars appear to be in the early stages of growth. Progressing away from the intrusive contact more sedimentary features such as bedding and granular textures are observed in outcrop.

Also peripheral to the intrusive within the metasedimentary zone are abundant multi-directional felsic veinlets approximately 1/8 to 1/4 inch in thickness which invade the sediments for up to 1000 ft. Near the contact, perhaps within 300 ft., they approach stockworks intensity. The veinlets are composed of secondary quartz and k-feldspar producing a bleaching effect in the sediments along micro-fractures which control the felsic injection.

The intrusive stock - metasediment contact is conspicuous for several miles due to the well developed red-brown pyritic gossan which extends several hundred feet into the sediments.

MINERALIZATION

Minor amounts of widespread disseminated pyrite and chalcopyrite mineralization occur throughout most of the monzonite stock. Several zones of greater mineralization with the addition of molybdenite occur marginal to the eastern sedimentary contact. Rock-chip values reach a maximum of 700 ppm Cu and 1650 ppm Mo.

The chalcopyrite favours thin fractures, quartz veins and veinlets. It is usually associated with pyrite and occasionally molybdenite and normally the molybdenite occurs by itself in dry fractures or as clots within quartz veinlets. Rarely is molybdenite seen in the disseminated form at Natlan.

Neither chalcopyrite nor molybdenite appears to favour one set of fracturing. Although both occur in the same outcrop they appear to be associated with two different phases or pulses of mineralizing fluids. Almost without exception chalcopyrite and molybdenite were not observed in the same fracture or quartz vein. Certainly the molybdenum in quartz veins is later than the disseminated chalcopyrite in the monzonite.

Associated with the metasedimentary "hornfels" halo is a pyritic zone especially well developed and gossaned along the eastern contact. Although pyrite was not actually observed exceeding 1 or 2% of the total volume of the rock, greater quantities probably exist. The heavy oxidation due to weathering on the surface has likely removed a large portion of the iron (and other ?) sulphides.

ALTERATION

Hydrothermal

As previously mentioned the body of the monzonite stock is relatively fresh and unaltered, however there is evidence of increasing alteration as one approaches the margins. Thin sections show the smaller plagioclase crystals to be 50% altered to sericite and minor epidote (saussuritization). In hand specimen some of the plagioclase crystals appear to have a greenish colouration.

Secondary potash feldspar alteration along fractures is readily visible in the hand specimen, after etching with hydrofluoric acid and staining with sodium cobaltinitrite. Potash feldspar is frequently associated with the mineralization where it envelopes veins up to 1/2 inch in width.

Fine grained brown secondary biotite occurs on some fractures in the monzonite along the eastern contact. The large euhedral biotite books also observed in this area all appear to be primary.

The degree of alteration associated with the Natlan intrusive can by no means be classified as intense, however, the potash feldspar, sausseritization, quartz veining and associated sulphide mineralization does indicate some hydrothermal activity did take place, especially along the eastern contact of the monzonite stock.

Supergene

Oxidation of the pyrite (and possibly chalcopyrite) is evident along the eastern contact, by the prolific limonitic staining and gossan development both in the intrusive and the metasediments. Undoubtedly the intense fracturing as well as the steep topographic relief in this area have facilitated the weathering of sulphides on the surface exposures.

Of importance to this sampling program is the reasonable chance that a significant portion of the copper on the surface has been removed. The rock chip sampling technique employed in this program would not have reached below the zone of supergene alteration.

CONCLUSIONS

1. The Natlan Stock has some features in common with those associated with other B.C. porphyry copper molybdenum deposits:

   a) it is a discrete acid intrusive stock intruded into Mesozoic sediments lying within the "Skeena Arch".

   b) it is an intrusive of intermediate acid composition (monzonitic) with some porphyritic phases.

   c) as an acid intrusive body it has an above average background sulphide content with local concentrations of chalcopyrite and molybdenite mineralization.

   d) there is evidence of hydrothermal alteration.

   e) there are zones of high intensity fracturing.

   f) there are zones of numerous multi-directional quartz veining.

   g) there is evidence of a pyrite "halo" in the sediments peripheral to the mineralized zone in the stock.

2. The steep rugged relief along the eastern edge of the property will severely limit the extent and type of follow-up surveys that can be performed over the main zones of interest.

3. A zone of possibly significant chalcopyrite - molybdenite mineralization approximately 7000 ft. long and varying from 300 ft. to 1200 ft. wide is associated with the eastern margin of the monzonitic stock. Several other isolated high copper - molybdenum values were obtained outside of this zone.

4. Weathering may have removed a considerable portion of the copper available to rock-chip sampling of surface exposures.

5. Visual prospecting for both copper sulphide and molybdenite mineralization is inhibited in the zones of prevalent limonite staining and gossan development which tend to effectively mask the underlying surfaces.

6. The copper - molybdenum values obtained in this rock geochemical program although encouraging in the Natlan claims are still quite low. Greater amounts of copper sulphide and molybdenite will have to be found before this property can be considered to have possible economic potential.

RECOMMENDATIONS

1. In order to determine if zones of greater sulphide content occur below the leached horizon within the broad zone of pyrite, chalcopyrite and molybdenite mineralization, it is recommended that an Induced Polarization (I.P.) survey be conducted. As the rugged terrain eliminates the use of a standard, evenly spaced grid system a program employing a scattered pattern of randomly orientated short I.P. lines, positioned where the topography will allow, is suggested.

2. Encouraging responses obtained by the above I.P. survey should be tested with a highly portable diamond drill such as a Winkie.

Respectfully submitted,

M. J. Gidluck

MJG/nk

M. J. Gidluck.

APPENDIX

QUALIFICATIONS

I, Marcus J. Gidluck graduated from the University of British Columbia with a Bachelors Degree in Science (Geology) in 1965. Since that time I have been actively engaged in mining exploration for base-metal deposits with the International Nickel Company of Canada, Limited in Canada and Australia.

Until April 1967 I was involved with geophysical programmes and follow-up diamond drilling operations in Northern Ontario.

The subsequent $5\frac{1}{2}$ years were spent with International Nickel Australia Ltd. in West Australia where I was primarily concerned with:

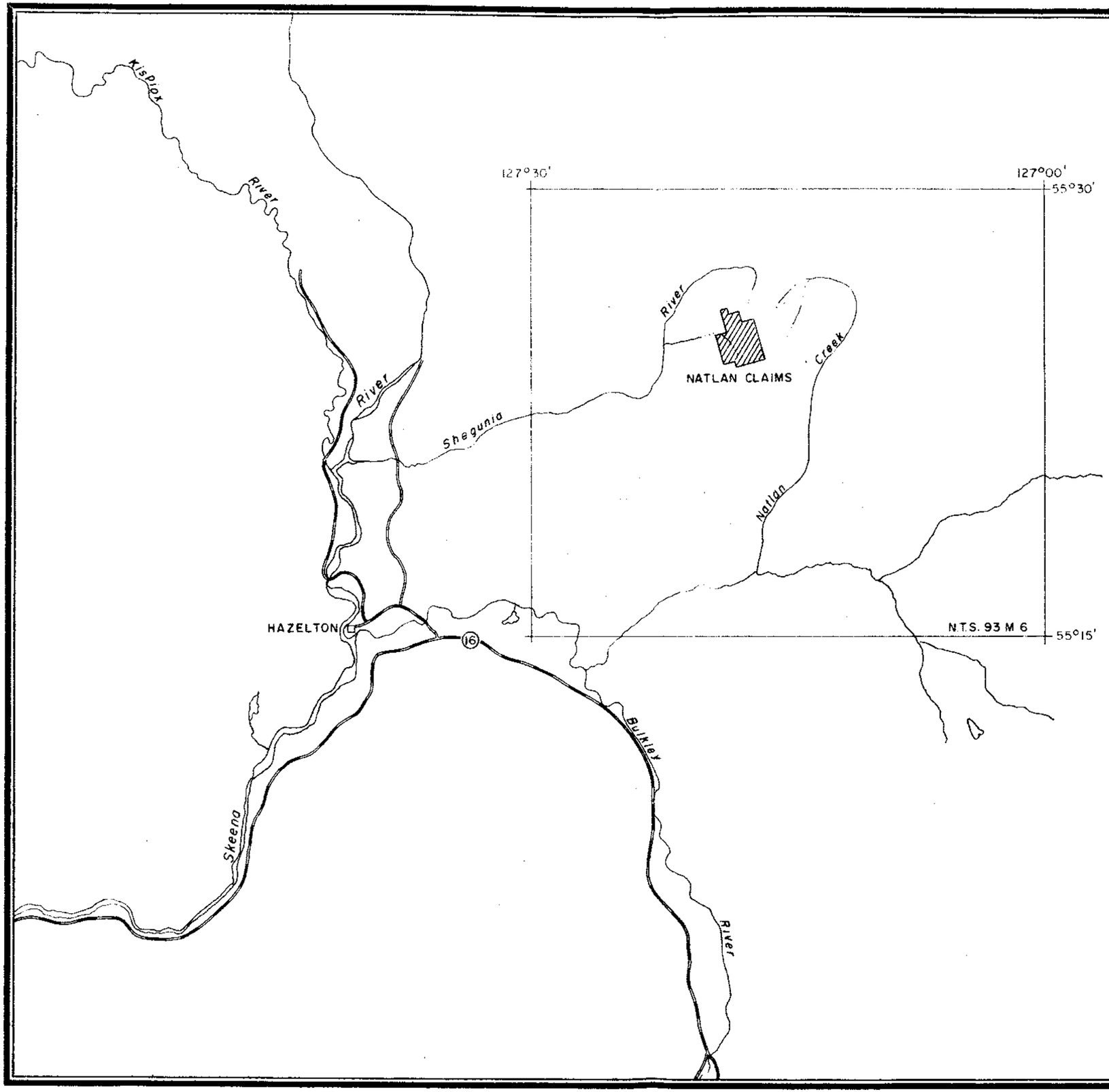
(a) geological mapping and drilling of claim groups for one year

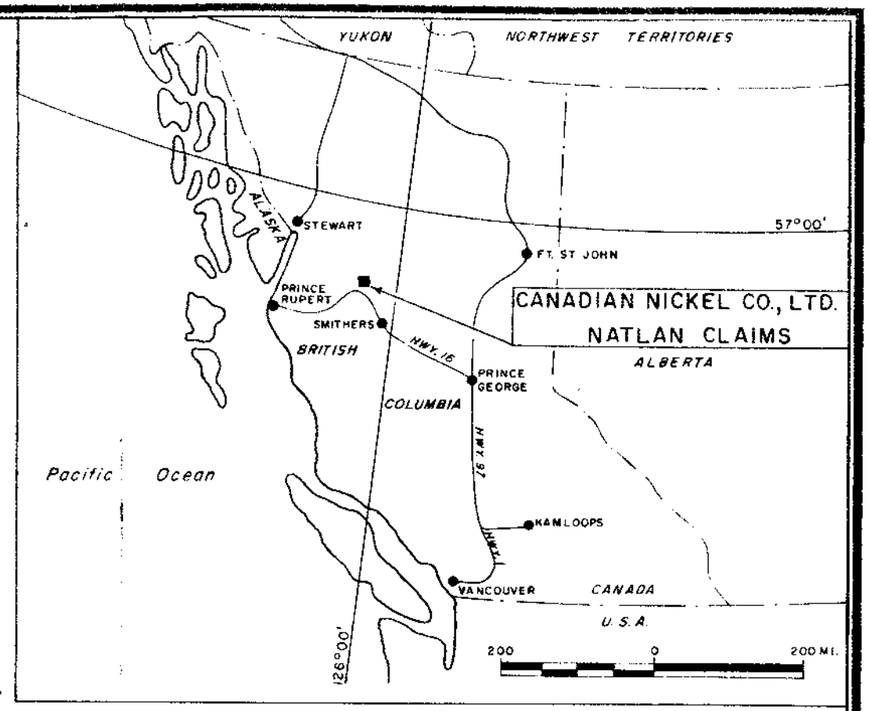
(b) on site supervision of geological mapping, geophysical and geochemical surveys as well as drilling (rotary, percussion and diamond) operations at the pre-development stage of a nickel - copper property for $2\frac{1}{2}$ years.

(c) conducting regional exploration and property evaluations of various base-metal prospects in the eastern half of West Australia for $1\frac{1}{2}$ years.

The past 2 years, 1973 and 1974 have been spent on the preparation and in-the-field supervision of reconnaissance exploration programs by Canico for porphyry copper - moly deposits in north central B.C.

M. J. Gidluck,
106 Cross Street,
Lively, Ontario.





CANADIAN NICKEL CO., LTD.
NATLAN CLAIMS

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5465 MAP 2

Canadian Nickel Co. Ltd.

LOCATION MAP

NATLAN CLAIMS
OMINECA MINING DIVISION
BRITISH COLUMBIA

5 0 5 MI

SCALE 1:250,000

5465
MAP 2

To accompany report by M.J. Gidluck Nov. 1974

Canadian Nickel Co. Ltd.

TOPOGRAPHICAL AND CLAIM MAP

NATLAN CLAIMS – GROUPS A and B

OMINECA MINING DIVISION

BRITISH COLUMBIA

1000 0 1000 FT.

SCALE: 1" = 1000'

5465

MAP 1

To accompany report by M.J. Gidluck Nov. 1974

93 M 6W

Shegunia River

NATLAN CLAIM BOUNDARY

580/30

510/89

700/44

X Campsite

NATLAN CLAIM BOUNDARY

Natlan Creek

LEGEND

Monzonite – Intermontane Intrusive Stock - probable Upper Cret. variable qtz, some qtz monzonite phases, weakly porphyritic.

Metasediments – Bowser Formation - Up. Jur. to Low Cret. f.g. greywackes, siltstones, local hornfels halo to monzonite stock

Geological Contact Defined

Geological Contact Assumed

Ridge Top

Creek

Rock Chip Sample Site

COPPER

- 0 – 49 ppm
- 50 – 99 ppm
- 100 – 249 ppm
- 250 – 499 ppm
- 500 ppm and over

Canadian Nickel Co. Ltd.

GEOLOGICAL and LITHOCHEMICAL SURVEY

NATLAN CLAIMS – GROUPS A and B

OMINECA MINING DIVISION

BRITISH COLUMBIA

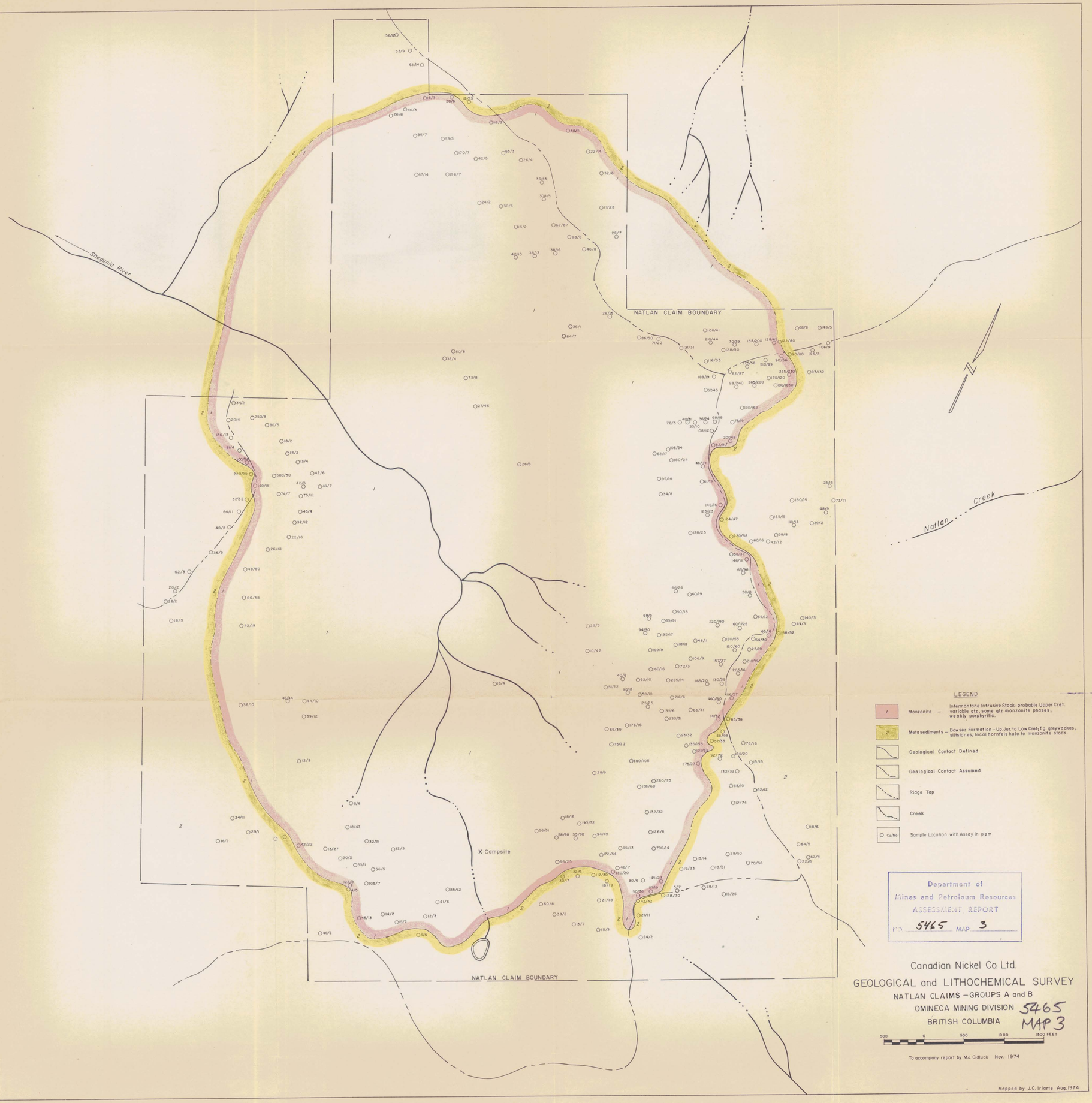
5465
MAP 4

500 0 500 1000 1500 FEET

To accompany report by M.J. Gidluck Nov. 1974

Mapped by J.C. Iriarte Aug. 1974

ABSO 300 2-73



LEGEND

- 1 — Monzonite — Intermontane Intrusive Stock - probable Upper Cret. variable qtz, some qtz monzonite phases, weakly porphyritic.
- 2 — Metasediments — Bowser Formation - Up. Jur. to Low Cret; f.g. greywackes, siltstones, local hornfels halo to monzonite stock.
- Geological Contact Defined
- Geological Contact Assumed
- Ridge Top
- Creek
- Sample Location with Assay in ppm (Cu/Mo)

Canadian Nickel Co. Ltd.

GEOLOGICAL and LITHOCHEMICAL SURVEY

NATLAN CLAIMS — GROUPS A and B

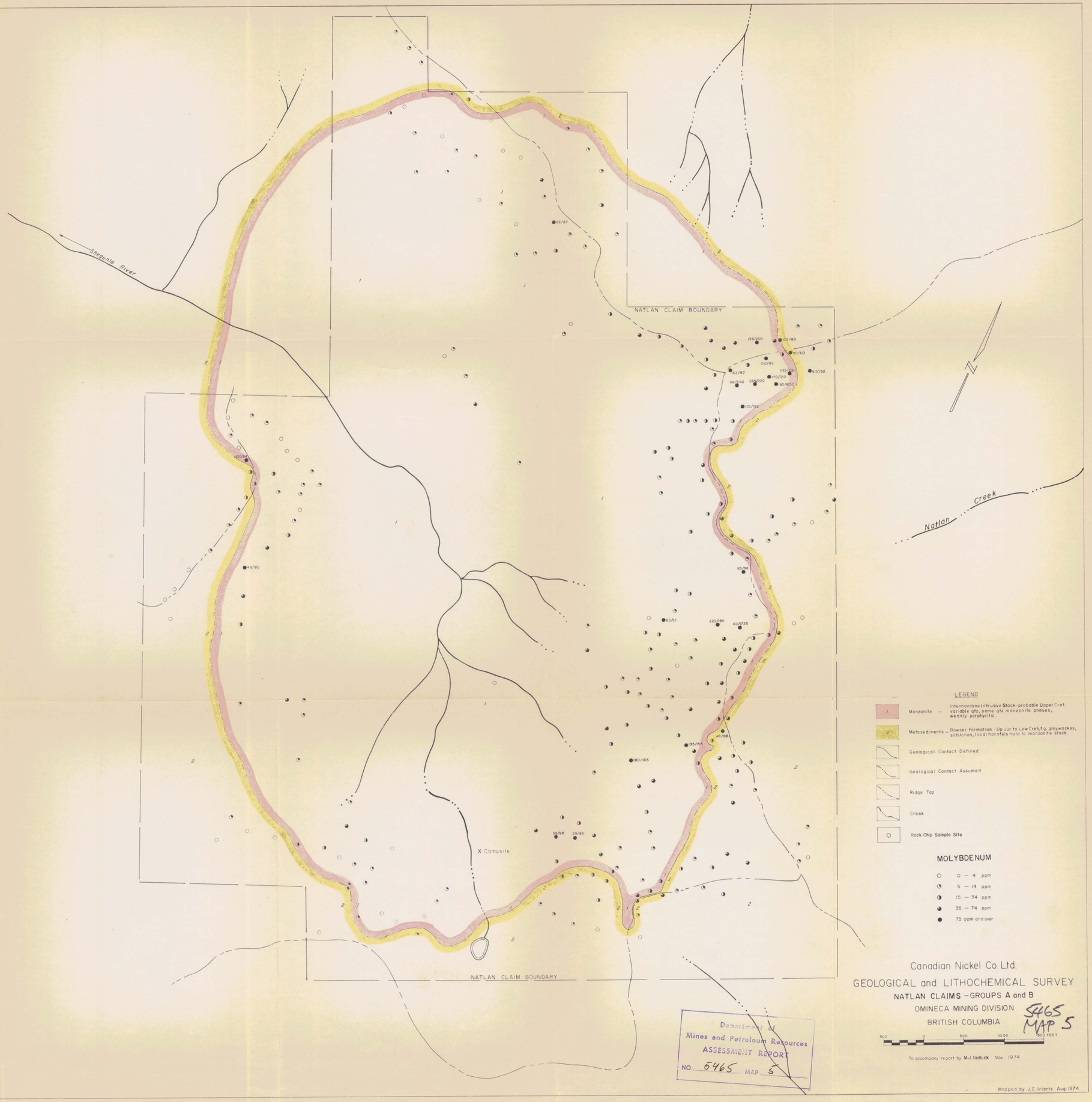
OMINECA MINING DIVISION 5465

BRITISH COLUMBIA MAP 3

500 0 500 1000 1500 FEET

To accompany report by M.J. Gidluck Nov. 1974

Mapped by J.C. Iriarte Aug. 1974


Shegunia River
NATLAN CLAIM BOUNDARY
158/200
122/80
90/110
62/87
342/89
335/130
97/132
98/450
265/200
170/120
190/650
320/62
62/87
49/80
65/98
65/91
220/190
60/725
135/755
49/98
180/105
58/98
55/90
X Campsite
NATLAN CLAIM BOUNDARY
Natlan Creek
LEGEND
Monzonite – Intermontane Intrusive Stock-probable Upper Cret. variable qtz, some qtz monzonite phases, weakly porphyritic.
Metasediments – Bowser Formation - Up. Jur. to Low Cret. f.g. greywackes, siltstones, local hornfels halo to monzonite stock.
Geological Contact Defined
Geological Contact Assumed
Ridge Top
Creek
Rock Chip Sample Site
MOLYBDENUM
0 – 4 ppm
5 – 14 ppm
15 – 34 ppm
35 – 74 ppm
75 ppm and over
Canadian Nickel Co Ltd.
GEOLOGICAL and LITHOCHEMICAL SURVEY
NATLAN CLAIMS – GROUPS A and B
OMINECA MINING DIVISION
BRITISH COLUMBIA
5465 MAP 5
500 0 500 1000 1500 FEET
To accompany report by M.J. Gidluck Nov. 1974
Mapped by J.C. Iriarte Aug. 1974
Department of Mines and Petroleum Resources ASSESSMENT REPORT NO. 5465 MAP 5