5681

CANADIAN NICKEL COMPANY LIMITED

GEOLOGICAL AND GEOCHEMICAL SURVEYS CONDUCTED ON SPUR CLAIMS

OMINECA MINING DIVISION

LAT. 56°02'N; LONG. 126°50'W

94D/2W

E. J. Gidluck
October 1975.

CONTENTS

SPUR CLAIMS

SUMMARY

Late in 1974 copper mineralization was located by Canadian Nickel Company Ltd. prospecting crews in a stratified sequence of volcanic rocks on Tsaytut Spur, west of Bear Lake, 90 miles north of Smithers, B.C. Sixteen claims were staked over the area of interest in October and recorded on November 5th. of the same year.

In early August 1975 a survey grid was established over the mineralization to provide the location control necessary for geochemical and geological surveys which followed immediately. These were completed on August 24th. 1975 for a total expenditure of $13,338.95.

The property is underlain by a sequence of easterly dipping Takla Group volcanic units of Upper Triassic to Lower Jurassic age. Copper mineralization in fracture fillings and irregular vein systems in the form of chalcocite, bornite, malachite-azurite, and minor chalcopyrite occurs within the contact zone of a basic lava flow and a volcaniclastic series of units. The distribution of the mineralization appears to be further controlled by one major NNE fault zone and a series of numerous crosscutting faults.

A series of north-south trending soil copper anomalies is associated with visible mineralization in outcrop, except were some gravity drift is suspected to have taken place.

Further exploration on the property is recommended in the form of a diamond drilling program involving 4 holes of about 500 ft. depth each.

LOCATION

The Spur claim group is located in the remote Skeena Mountains, 90 miles NNW of Smithers, B.C. at a latitude of 56°03'N and a longitude of 126°50'W within quadrant 94-D/2E. The property straddles the main ridge of the Tsaytut Spur at an elevation of 6000 ft. A.S.L. just west of the south end of Bear Lake.

ACCESS

Access for exploration purposes is attained only by helicopter. Since the top of Tsaytut Spur is relatively flat and treeless there is no problem landing on top of the ridge, while landing spots on either flank of the ridge are extremely limited.

Support for this year's program was provided by a Jet Ranger 206B helicopter on casual hire from Okanogan Helicopters, based in Smithers. Once the fly camp was established on the claims the helicopter was required only periodically to transport supplies and personnel to and from Smithers.

Fixed wing aircraft up to a DC3 in size can land at the B.C. Railway air-strip at the north end of Bear Lake, 12 miles north of the property. The Lake itself will easily accommodate any size of float equipped aircraft. A helicopter is still required in both cases to provide transport from the strip or the Lake to the Spur claims. The new B.C. Railway line passes within 5 miles to the east of the claim group.

TOPOGRAPHY AND WATER

The major portion of the claim group and all of the survey grid is situated above tree line which varies from 4500 feet to 5500 feet A.S.L. in the Bear Lake area. The ridge top which comprises the central claims, is a rolling relatively flat landscape occupied mainly by alpine tundra heathers and grasses with numerous broad rocky patches of frost heaved material and isolated outcrops. The west flank of the ridge slopes at an approximate 25° and consists largely of small crestline cliffs feeding talus slopes bordering on the tree line. The upper areas of the west flank are easily traversed by foot.

Much of the east flank of the ridge is dip-slope terrain with the slopes tending to parallel the easterly dipping volcanic units. This situation gives rise to 30° - 35° shear rock faces which are almost impossible to traverse without rope support. Little vegetation occurs on the eastern claims.

The major fault zone which transects the property on the ridge top in a NNW direction forms a prominent topographical low or gulch. Permanent snow patches at the head of the south end of this depression give rise to several small streams which could support a drilling program on the property.

CLAIMS

Canico prospecting crews located copper mineralization on Tsaytut Spur late in August 1974. Sixteen Spur claims were staked on October 21, 1974 and officially recorded November 5, 1974.

Name	Record No.	Tag No.	Anniversary Date
Spur # 1 to Spur # 16	132849 to 132864	4738015 to 4738161	November 5th., 1975 November 5th., 1975

FIELD PROGRAM 1975

Contract line cutter G. Auger from Smithers B.C. was employed to construct a picket grid over the main area of interest on the Spur claims. On July 31st. a fly camp was established on the property and surveying of the baseline with transit and chain commenced. On August 6th., 7.22 miles of grid line, mostly on the ridge top was completed and the contract crew of two men was replaced by a three man Canico geological team.

The geological mapping of the claims was conducted by F. Puskas assisted by D. Shaw. Because of the extremely poor weather experienced during most of the month of August and the high elevation of the property (6000 ft. A.S.L.), only about 50% of the crew time (August 6th. to August 24th.) could be spent on constructive mapping.

Soil sampling centered mainly in the area of limited outcrop exposure on the ridge top, was performed by R. Lamour during the same period. On August 20th. Lamour and some of the field equipment were flown back to Smithers with the remaining camp and personnel following on August 24th.

In this report F. Puskas contributed the section on the geology and the geological map. The remainder of the report as well as the general organization and supervision of the field program was conducted by M. Gidluck.

EXPENDITURES

Helicopter - Okanagan Helicopters Jet Ranger

Line Cutting Crew:	July 31	3.5 hr @ $315/hr & fuel & oil	1157.77	
	Aug. 6	3.7 hr " " "	1223.53	
Geology Crew:	Aug. 8	2.4 hr @ $315/hr & fuel & oil	778.60	
	Aug. 12	2.2 hr " " "	727.80	
	Aug. 20	1.6 hr " " "	529.25	
	Aug. 24	2.3 hr " " "	760.67	
		15.7 hr		5117.62

Personnel - Inco

Mobilization: P.W.A. Van.to Smithers return, 4 men x $122 488.00

Salaries - Including benefits

F. Puskas, Staff Geol.	Aug. 5 to 24	20 days
D. Shaw, Student Geol.	Aug. 5 to 24	20 days
B. Lamour, Geol. Tech.	Aug. 5 to 20	16 days
M. Gidluck, Area Geol.	July 31, Aug. 3 to 6	5 days

Average rate $79.56/day x 61 days = 4853.00

5341.00

Grid Contract - Gerard Auger, Smithers B.C.
7.22 line miles @ $155.00 1119.10

Analyses - Bondar Clegg and Co. Ltd., Van.

Soil Samples for Cu, Zn, Ag 150 x $2.90	435.00	
Freight, Smithers to Van.	13.15	
		448.15

Supplies - Business in Smithers, B.C.

Groceries-Super Valu Stores	668.81	
Grid Pickets-Tatlow Industries	86.63	
Fuel, Kapthe-Esso, Home, Standard	59.47	
Survey tape, stationery, radio battery	198.17	
		1013.08

Report - Inco Staff, Copper Cliff, Ont.

Draftsmen, geologist	275	
Supplies	25	
		300.00

TOTAL: 13,338.95

REGIONAL GEOLOGY

The Spur property lies within northwesterly trending Takla group (Mid Jurassic) basic to intermediate volcanics and intercalated volcaniclastics forming Tsyatut Spur.

Gentle eastward dips, averaging 30°, and eastward facings are consistent and support Lord's (1941-45) contention that these rocks comprise the western limb of a synclinorium whose major axis lies 7 miles to the east. The immediately overlying sediments occupying the core of the major syncline belong to the Sustut Group of Upper Cretaceous age.

Granitoid (Kastberg) massifs of Tertiary age intrude the Takla formations.

DETAIL GEOLOGY

The property is underlain by a sequence of intercalated lavas of andesitic-basaltic composition and volcaniclastics.

Lavas

The lavas occur as two intimately associated phases, namely; (i) a predominantly grey coloured, extremely amygdular phase and (ii) a massive, more reddish coloured, essentially non-amygdular phase exhibiting obvious phenocrysts of variably hematized plagioclase with/without pyroxene.

These two phases can occur in such a manner as to assist in the delineation of successive flow units. More commonly individual flows can not be distinguished.

Areas of amygdular lava invariably contain discontinuous "rafts" or septa of volcaniclastics. In these areas, in particular, the lava occurs as discrete "fragments" varying from several inches, so-called balls, to several feet, so-called digitations. Absence of marked, marginal, quenching and concentric "onion-skin" jointing associated with the formation of lava balls and lava digitations should be mentioned.

Lavas, possibly representing the youngest effusives in the Spur property, exhibit associated "feeders" and "centers" of doming.

Volcaniclastics

The Volcaniclastic assemblage exhibits extreme colour variation from buff brown to brick red and vary compositionally in a regular manner, from conglomerates to sandstones to siltstones.

Coarse lahars are relatively minor.

Features exhibited by the volcaniclastics include the following:

(i) bed disruption and/or truncation in the vicinity of lava domes
(ii) grading in individual beds
(iii) channelling
(iv) load casts
(v) convolute bedding
(vi) cross-bedding

Structure

Previously enumerated features exhibited by the volcaniclastics established stratigraphic facing to the northeast.

Spur property has been extensively faulted; the major (Hunter) fault system strikes N-S and dips to the west at 70°. Relative movement suggested is a thrusting of the western block with a coincident downdropping of that portion of the overridden block bounded by the Hunter fault system.

Dextral faulting exhibiting limited displacement transects the Takla formations at relatively high angles.

Mineralization

Copper sulphides occur as both disseminations in the volcanic and volcaniclastic rocks and fissure fillings. Sulphides present in decreasing order of relative abundance include chalcocite-covellite-bornite-chalcopyrite-galena. Native copper was not recognized.

The areas of notable mineralization have been noted on the accompanying geological plan. In general the areas of highest concentration occur in the contact zone between lavas and volcaniclastics.

GEOCHEMICAL SURVEY

The soil sampling program carried out by Lamour consisted of 150 samples taken at 100 ft. stations on 200 ft. and 400 ft. spaced grid lines at the higher elevations on the property. It was hoped initially that such a survey would provide information on the large area of no outcrop comprising the central portion of the grid. Upon closer examination in the field however, much of this area was found to be covered by soils transported either by water, glacial action and/or gravity and so were not sampled as they could not be classed as insitu.

Each sample was taken from a depth of about 6 inches, usually below the root zone and into a zone containing bedrock fragments. In such an alpine terrain this zone probably represents a mixture of poorly developed "B" and "C" horizons. The samples taken were dried and sieved to a minus 80 fraction by the Bondar Clegg and Co. Ltd. Laboratory in Vancouver where they were analysed for copper, zinc and silver.

Treatment consisted of attacking the pulp first with concentrated nitric acid and then by the addition of concentrated hydrochloric acid. After 3 hours of digestion the solutions were bulked to a 20% acid concentration, homogenized, settled and analysed by atomic absorption.

From the analytical data anomalous threshold values for each of the three metals were calculated by computer. Threshold was assumed to be the mean plus twice the standard deviation after discarding obvious high assays of greater than 380 ppm Cu, 400 ppm Zn and 4.0 ppm Ag. The statistical anomalies thus calculated are:

Copper above 213 ppm
Zinc above 227 ppm
Silver above 2.8 ppm

As can be seen on the contoured geochemical plans, there is a series of partially coinciding copper and silver highs trending in an approximate north-south direction along the western edge of the "J" shaped Hunter fault zone. The western extent of many of these anomalies is not terminated by low assays but by the lack of sample sites due to the paucity of available insitu soils.

The copper highs with maximum values ranging from 316 to 860 ppm Cu are best defined by the 100 ppm Cu contour. The silver highs with maximum values between 2.1 and 12.0 ppm Ag are defined by the 1.5 ppm Ag contour. Silver shows up as a more pronounced linear trend than does the copper which exhibits several northwesterly extensions.

On the east side of the fault zone are four small isolated copper anomalies with maximum values ranging from 205 ppm to 620 ppm Cu. Several of these have slightly displaced but likely associated, silver anomalies which tend to occur either down strike or down slope from the copper highs.

The zinc appears to be more erratically distributed. The best anomalies, with maximum values ranging from 316 ppm Zn to 830 ppm Zn, are confined to those areas producing the highest copper values.

CONCLUSIONS

1. Copper sulphide mineralization is associated with the contact zone of the basaltic flows and the easterly dipping volcaniclastic sequence.

2. The copper mineralization appears to be further confined, on the surface at least, to the western side of the major NNE trending linear feature, the Hunter fault zone. No copper occurs to the east of the fault with the exception of the narrow faulted vein at 5S-8S/4E-8E.

3. Considerable east-west faulting has also occurred which has further disturbed the volcanic stratigraphy as well as the distribution of the copper mineralization.

4. The major geochemical anomaly of copper, zinc and silver in the soils in the southwest corner of the grid coincides with reported chalcocite, bornite and chalcopyrite mineralization in this area.

5. The north-south trending string of copper, silver and zinc (?) soil anomalies in the region from 2S to 12S will be partially indicative of mineralization occurring in the covered lithologies immediately to the west. Certain eastward down slope gravity drift from the crest line must have taken place here. The Hunter fault zone represents a local depression or gulch where it crosses the ridge top and would tend to act as a soil trap. Visible copper mineralization was observed in outcrop exposure on the crest line in this area.

6. The isolated copper-silver highs on the east side of the fault zone may be associated with the basic flow-volcaniclastic contacts as well. However, the two most southerly of these anomalies in the unmapped covered region on the 12S and 16S lines, may represent a south extension of the small faulted mineralized vein mapped to the north.

7. An I.P. survey could be considered as the next logical phase of exploration here but it is expected that the following features of this occurrence would present many problems to the interpretation of the results obtained from such a program:

   a) the low total sulphide content
   b) the irregular nature of the mineralization as seen by its tendency to occur in fracture and vein systems.
   c) the abundant faulting both parallel to and cross cutting the mineralized area.
   d) the relatively shallow dip of the volcanic sequence of the host rocks.

8. Due to the erratic nature of the distribution of copper which occurs mainly along fractures and vein systems and the large areas without outcrop exposure immediately adjacent to known mineralized localities, the only practical method of further testing the potential of this property is by drilling. For the above reasons surface sampling methods would not give an accurate or consistent picture of the copper potential.

RECOMMENDATIONS

A program of 4 diamond drill holes of approximately 500 ft. each is recommended as the next logical step in the exploration of this property. The holes should be designed, at least initially, to collar on the western edge of the Hunter fault zone and angle west to intersect at depth the combined surface mineralization and adjacent soil anomalies; two holes in the 8S to 4S area and two holes in the 1S to 5W area.

Respectfully submitted,

M. J. Gidluck, P.Eng.

F. P. Puskas.

October 28, 1975.

REGISTERED PROFESSIONAL ENGINEER
M. J. GIDLUCK
PROVINCE OF ONTARIO

APPENDIX A

QUALIFICATIONS

I, Frank Peter Puskas, received an Honours B. Sc. (Geology-Chemistry Minor) from McMaster University in Hamilton, Ontario. Intervening summers were spent field mapping with Federal and Provincial Government field parties. Mapping areas included the Labrador Trough, Grenville and Superior Provinces. Last two summers I acted as party chief in charge of a party of three.

Received my Masters degree (Geochemistry) at Lehigh University, Bethlehem, Pa. I was awarded the New Jersey Zinc Fellowship; elected into the Society of Sigma XI in recognition of academic achievements (top of class) and research ability (geochemical study of the Fort Coldwell Alkali Complex, Ontario).

Completed course requirements for PhD at Lehigh and University of Minnesota, Minneapolis, Min.

From 1965 to 1970 I was in charge of applied research for Anaconda in Eastern Canada. Research laboratory was designed and set-up in Thunder Bay. From 1970 I have been employed by Inco, initially as an applied research geologist.

My main responsibility with Anaconda and Inco has been volcanics and associated deposits; base metal deposits associated with laccomorphic intrusives. I have worked in E. Canada, U.S.A., Mexico and W. Australia.

My experience includes the following:

1) geological (lithochemical) mapping at detail and regional scales
2) detail underground mapping
3) detail logging of diamond drill core
4) in charge of base metal exploration program involving drilling, geophysics; period of 1 year
5) recommendation and execution of self-generated exploration programs of "grass roots" nature
6) property evaluation
7) conceptual modelling.

Frank P. Puskas
259 Anderson Drive
Lively, Ontario

APPENDIX B

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 and its subsidiaries in Canada, Australia and the United States.

In this period of time my experience has included:

- geological mapping at detail and regional scales
- logging of diamond drill core and rotary-percussion drill chips
- supervision of varied drilling programs, geochemical survey programs, varied geophysical survey programs, geological mapping and prospecting programs,

in Ontario, West Australia, Washington, U.S.A., and B.C.

The past three years have been concerned solely with the preparation and field supervision of exploration programs in the Cordillera of B.C. and Washington for copper and/or molybdenum deposits.

I am a registered member of the Association of Professional Engineers of Ontario and the Geological Association of Canada.

M. J. Gidluck P. Eng.

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

APPENDIX C

STATEMENT

in account with

GERARD AUGER

Line Cutting & Staking — Geo. Chem, Mag. & E.M.

P.O. Box 1055, Phone 847-2834

SMITHERS, B.C. ..... 197....

M. Canadian Nickel Co. Ltd Field Exnl.

Copper Cliff Ont.

P.O. N. 1 N.O.

BEE-HOOPE PRINTING LTD.

38,100 ft of Line cutting	
Bear Lake area,	
7.22 miles @ $155.00 per mile	1,119.00
C.O.D. From Copper Cliff	24.75
	1,143.85

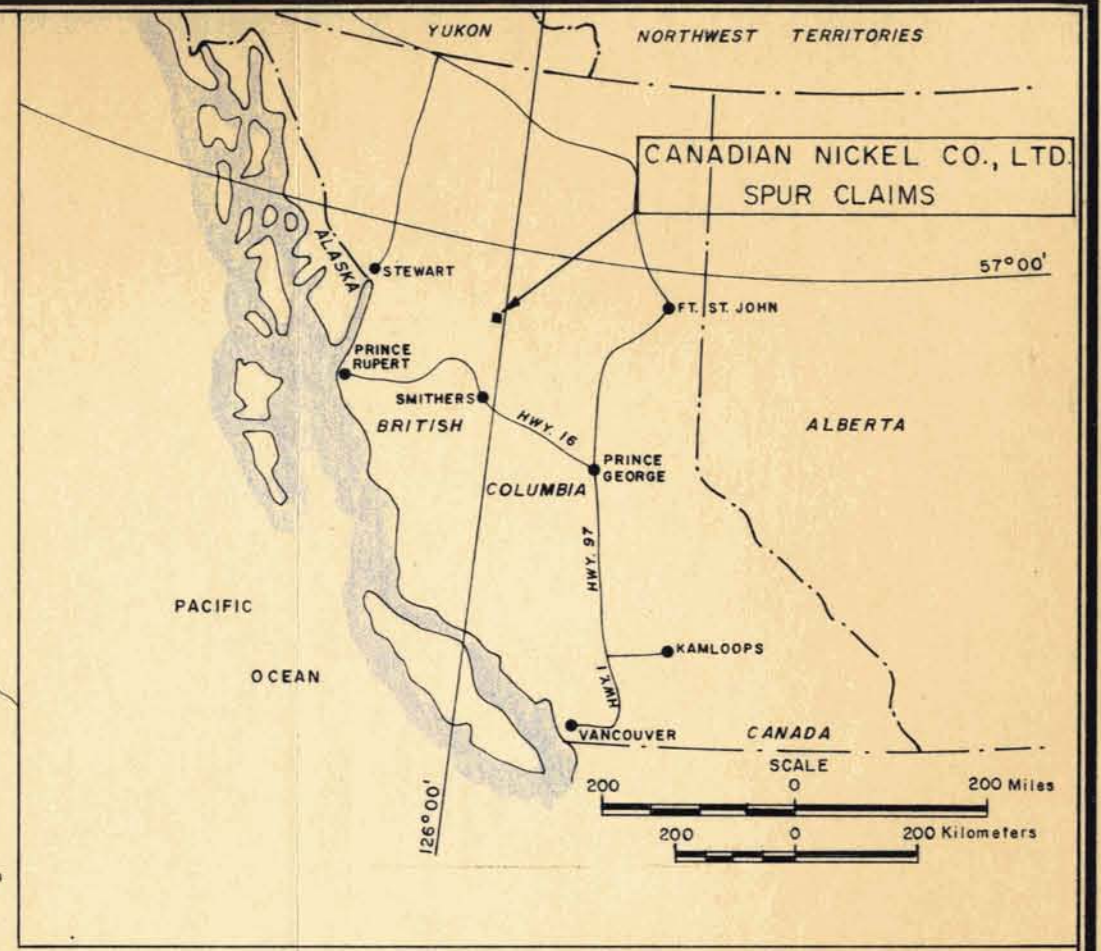
O.K. for payment

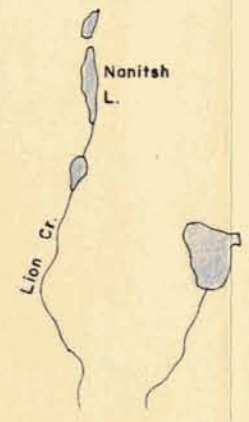
Charge 60803 - 14030

AFE

INVOICE NO. 52568	PAY VOUCHER 01254	APPROVED BY AFE
GROSS VALUE $1,143.85	DISCOUNT TAKEN	DATE
ACCOUNT NUMBER 60803	CLOSE NUMBER 14030	TAX
SUPPLIER CODE 9960	CLOSE NUMBER 550	PAID ON
GOODS RECD	DATE REC'D AUG 22 1975	PAYMENT APPROV.

Aug. 27/75





Canadian Nickel Co. Ltd.

LOCATION MAP

SPUR CLAIMS

OMINECA MINING DIVISION

BRITISH COLUMBIA

SCALE

5 0 5 Miles

5 0 5 Kilometers

To accompany report by M.J. Gidluck Oct. 1975

Canadian Nickel Co. Ltd.

SURVEY GRID AND CLAIM MAP

SPUR CLAIMS

OMINECA MINING DIVISION

BRITISH COLUMBIA

SCALE

1000 0 1000 2000 Feet

200 0 200 400 600 Meters

568TM-2

To accompany report by M.D. Gidluck Oct. 1975

94 D 2 W

SPUR 1
SPUR 2
SPUR 3
SPUR 4
SPUR 5
SPUR 6
SPUR 7
SPUR 9
SPUR 11
SPUR 13
Camp
Ridge
HUNTER FAULT
1500 N
1000 N
500 N
500 S
1000 S
1500 S
500 E
1000 E
500 W
1000 W
7/8 00

LEGEND

MESOZOIC
UPPER TRIASSIC and LOWER JURASSIC

3 — QUARTZ LATITE DYKE

TAKLA GROUP: Interlayered sequence of andesite-basalt flows (1) and volcaniclastics (2)

2 — VOLCANICLASTICS; red to buff brown conglomerates, sandstones, siltstones, lahars.

1 — BASIC LAVAS; variably digitated and/or ballied, grey to red coloured andesite-basalts; plagioclase with/without pyroxene phenocrysts; includes dome complexes, 1a, and feeders 1b.

Bedding (inclined, vertical, dip unknown)
Fault
Ⓜ Locality of mineralization
Crest line of ridge
Cu, Zn, Ag in soils
Claim boundary
Claim post
SPUR 7 Claim number

Canadian Nickel Co. Ltd.

GEOLOGICAL and GEOCHEMICAL PLAN

SPUR CLAIMS
OMINECA MINING DIVISION
BRITISH COLUMBIA

SCALE
FEET
100 0 100 200 300
METERS
10 0 50 100

To accompany report by M.J. Gidluck, Oct. 1975.

SPUR 1
SPUR 2
SPUR 3
SPUR 4
SPUR 5
SPUR 6
SPUR 9
SPUR 11
SPUR 13
HUNTER FAULT
Ridge
1500 N
1000 N
500 N
500 S
1000 S
1500 S
500 W
1000 W
500 E
1000 E

LEGEND

MESOZOIC
UPPER TRIASSIC and LOWER JURASSIC

3 — QUARTZ LATITE DYKE

TAKLA GROUP: Interlayered sequence of andesite - basalt flows (1) and volcaniclastics (2)

2 — VOLCANICLASTICS; red to buff brown conglomerates, sandstones, siltstones, lahars.

1 — BASIC LAVAS; variably digitated and/or bolled, grey to red coloured andesite - basalts; plagioclase with / without pyroxene phenocrysts; includes dome complexes, 1a, and feeders 1b.

Bedding (inclined, vertical, dip unknown)
Fault
(M) Locality of mineralization
Crest line of ridge
Cu125/100/1.5 Cu, Zn, Ag in soils
Claim boundary
Claim post
SPUR 7 Claim number
150 / 200 Contour interval 50 p.p.m
213 Statistical threshold

Canadian Nickel Co. Ltd.

GEOLOGICAL and GEOCHEMICAL PLAN (Copper)

SPUR CLAIMS
OMINECA MINING DIVISION
BRITISH COLUMBIA

SCALE
FEET
100 0 100 200 300
METERS
10 0 50 100

To accompany report by M.J. Gidluck, Oct. 1975.

SPUR 1
SPUR 2
SPUR 3
SPUR 4
SPUR 5
SPUR 6
SPUR 9
SPUR 11
SPUR 13
Comp
Ridge
HUNTER FAULT
1500 N
1000 N
500 N
500 S
1000 S
1500 S
500 W
1000 W
1000 E
500 E
00

LEGEND

MESOZOIC
UPPER TRIASSIC and LOWER JURASSIC

3 — QUARTZ LATITE DYKE

TAKLA GROUP: Interlayered sequence of andesite - basalt flows (1) and volcaniclastics (2)

2 — VOLCANICLASTICS; red to buff brown conglomerates, sandstones, siltstones, lahars.

1 — BASIC LAVAS, variably digitated and/or bolled, grey to red coloured andesite - basalts; plagioclase with/without pyroxene phenocrysts; includes dome complexes, 1a, and feeders 1b.

- Bedding (inclined, vertical, dip unknown)
- Fault
- (M) Locality of mineralization
- Crest line of ridge
- Cu, Zn, Ag in soils
- Claim boundary
- Claim post
- SPUR 7 — Claim number
- Contour interval 50 p.p.m.
- Statistical threshold

Canadian Nickel Co. Ltd.

GEOLOGICAL and GEOCHEMICAL PLAN (Zinc)

SPUR CLAIMS
OMINECA MINING DIVISION
BRITISH COLUMBIA

SCALE
FEET
100 0 100 200 300
METERS
10 0 50 100

To accompany report by M.J. Gidluck, Oct. 1975.


SPUR 1
SPUR 2
SPUR 3
SPUR 4
SPUR 5
SPUR 6
SPUR 9
SPUR 11
SPUR 13
Comp
HUNTER FAULT
Ridge
1500 N
1000 N
500 N
500 S
1000 S
1500 S
500 E
1000 E
500 W
1000 W
LEGEND
MESOZOIC
UPPER TRIASSIC and LOWER JURASSIC
3 QUARTZ LATITE DYKE
TAKLA GROUP. Interlayered sequence of andesite - basalt flows (1) and volcaniclastics (2)
2 VOLCANICLASTICS; red to buff brown conglomerates, sandstones, siltstones, lahars.
1 BASIC LAVAS; variably digitated and/or bolled, grey to red coloured andesite - basalts; plagioclase with/without pyroxene phenocrysts; includes dome complexes, Ia, and feeders Ib.
Bedding (inclined, vertical, dip unknown)
Fault
Locality of mineralization
Crest line of ridge
Cu, Zn, Ag in soils
Claim boundary
Claim post
SPUR 7 Claim number
Contour interval 5 p.p.m.
Statistical threshold
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5681
Canadian Nickel Co. Ltd.
GEOLOGICAL and GEOCHEMICAL PLAN (Silver)
SPUR CLAIMS
OMINECA MINING DIVISION
BRITISH COLUMBIA
SCALE
FEET
100 0 100 200 300
METERS
10 0 50 100
To accompany report by M.J. Gidluck, Oct. 1975.