

Old Nick 886210

# FAXED

Fax Cover Sheet
DATE: Feb. 3/17 TIME: 3,00pm
To: John D. Harvey Prospectors Alliance Ital.
PHONE: FAX: (4/6) 360- 4419
FROM: John Schroeler, PHONE: 604-660-2812 Seniar Regimal Geologist FAX: 604-775.0313
RE: Roundup '97 Conversations - Nickel
CC:
Number of pages including cover sheet: $25 (14 + 11)$
REMARKS:
□ Urgent □ For Your Review □ Reply ASAP □ Please Comment
Message
John, 1 Into promised on "Old Nick"
That a brief chat with Ursula Mowalt - very interesting. Good area.
See you at PDA Cheers, Mailing Address Locations
Mailing Address: Location:

Ministry of Employment and Investment Mailing Address: #301-865 Hornby Street Vancouver, BC V6Z 2G3

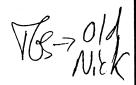
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#301-865 Hornby Street



# Gold City Minag Corporation Orion International Minerals Corp. Phoenix Gold Resources Ltd.

VSE:GCP VSE:OIM VSE:PHO



### JOINT NEWS RELEASE

**JANUARY 8, 1997** 

FOR IMMEDIATE RELEASE

PROGRESS REPORT
OLD NICK NICKEL/COBALT PROPERTY
BRIDESVILLE, BRITISH COLUMBIA, CANADA

Vancouver, B.C.: John Chapman, President of Gold City Mining Corporation is pleased to announce that the owners (GCP: 50%, OIM: 25%, PHO: 25%) of the Old Nick property have been informed by Applied Mine Technologies Inc. ("AMTP") of positive progress at the Old Nick project.

A six hole (740 meter) NQ diamond drilling program in the Main zone was conducted to obtain representative samples for metallurgical testing. Drilling also confirmed earlier exploration results obtained by Newmont Mining Corporation of Canada Limited (1968). The Main zone mineralization, which has been tested along strike 700 meters and is 100 meters thick, is interpreted as being part of the top limb of an anticline. Assuming the lower limb has the same continuity, which can be inferred from 1968 trenching, the Main zone exploration target contains 300,000 tonnes per down-dip meter. Assay results within the mineralized horizon averaged 0.18% nickel and 0.010% cobalt within metasediments and 0.30% nickel 0.015% cobalt within ultrabasics.

Metallurgical testing of surface samples in 1995 and 1996 indicated recoveries in the 75% to 90% range for both nickel and cobalt, using a 25 hour agitated leach under weak acid conditions at atmospheric pressure. Also, bench scale column leaching on crushed samples (minus 0.6 centimeter) indicates recoveries of up to 60% for nickel and cobalt over a 230 day period. Column testing is now being conducted on a larger scale (25.4 centimeter column diameter) using fresh subsurface samples from the diamond drill program. Early results indicate that nickel and cobalt are leaching at rates similar to those experienced with the surface samples. Solvent extraction tests on the nickel/cobalt solutions from column leaching are on-going. Electrowinning tests are scheduled to commence in l'ebruary.

AMTI has advised the owners that more than \$250,000 has been expended on the Project in 1996, and therefore AMTI has vested, under the terms of the Option Agreement, to 5% ownership in the Project. AMTI has also informed the owners that the \$750,000 Old Nick program budgeted for 1997 has been approved by AMTI's management. The 1997 program includes diamond drilling, further metallurgical process development and permitting for bulk sampling and on-site pilot plant metallurgical testing.

The Project work to date, indicates a significant nickel/cobalt resource containing \$30 per tonne metal value and a metallurgical process with positive economic potential. The Old Nick deposit has potential to be developed as a large open-pit heap leach operation using solvent extraction and electrowinning processing on-site, to produce high-quality nickel and cobalt metals.

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#### For further information contact:

John Chapman, Gold City Mining Corporation
Robert Miller, Orion International Minerals Corp.

John Carson, Phoenix Gold Resources Ltd.

Bob Boldock, Applied Mine Technologies Inc.

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604.488.0100

May 16/96

## GOLD CITY MINING CORPORATION

### **OLD NICK**

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Ni, Co

SUMMARY The Old Nick Nickel Deposit is located in South-Central British Columbia, just north of the U.S. border, and south-west of the village of Rock Creek. This unique surface-minable sulphide deposit has been estimated to contain in excess of 100 million tonnes grading 0.22% nickel and 0.015% cobalt.

PROPERTY The Old Nick deposit is located at 49° 04'N and 119° 06'W, 36 kilometres east of Osoyoos, B.C. and just south of the main Trans-Provincial Highway #3. Services and accommodation are available at the Town of Rock Creek, 10 kilometres east of the Property. Topography is characteristic of a glaciated, maturely-eroded highland, with stands of fir, pine and scrub grasslands. Access to the property is from highway #3 at Rock Creek, onto the abandoned Great Northern Railway right-of-way which passes through the heart of the deposit. Within the deposit, there are numerous logging, mining and drill roads which allow for vehicle access. This property is controlled by the Rock Creek Gold Trend Joint Venture.

GEOLOGY Generally, the property is underlain by rocks of the Permian (and/or) Triassic Anarchist Group (greenstone, quartzite greywacke), which have been intruded by Cretaceous Nelson plutonic rocks (granodiorite, quartz diorites, and monzonites) and by ultra-basic magnetic dykes, also of the Nelson series. The structure of the area has been described as being complex with the bedding tightly folded and cut by several fault trends, the dominant being north-westerly.

MINERALIZATION Nickel sulphide mineralization occurs in two rock types: (a) in peridotitic dunite rocks as pentlandite occluded in pyrrhotite; pentlandite and pyrrhotite occurring in amphiboles, serpentine and talc in the altered dunite, and (b) in pyrometasomatic quartzite of the Anarchist Group; pentlandite in minute intergrowths with pyrrhotite and pyrite in fine sericitic-chloritic veinlets.

The pentlandite mineralization occurs in pyrometasomatic quartzite, as a band, "2,600 feet long and approximately 400 feet wide, and in adjacent peridotitic-dunite dykes. Petrological work on the mineralized quartzite has revealed the presence of minute injections of basic rock into the sediments. The pentlandite is closely associated with these injections" - "Nickeliferous zones, grading 0.15 to 0.25% nickel, were found to be remarkably uniform and continuous within the quartzite horizon."

**EXPLORATION HISTORY** Since discovery by prospecting in 1955, considerable exploration

Coope, J.A.; Dolan, W.M.; Costin, C.P. <u>Geological, Geochemical, and Geophysical Exploration of the Nickel Ridge Property (Old Nick Option)</u>, <u>Bridesville</u>, <u>B.C.</u> Newmont Mining Corp. of Canada Ltd., May 7, 1968.

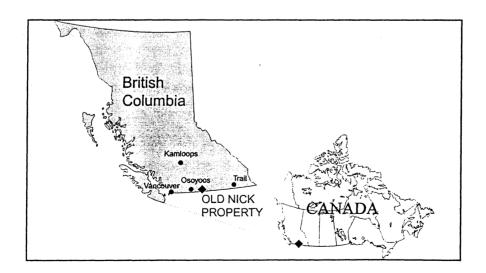
and developent work has been completed, including geological mapping, stream sediment geochemistry, soil geochemistry, ground magnetics and EM, airborne magnetics, trenching, percussion drilling, diamond drilling and metallurgical testing. The property has had the benefit of investigation by major mining companies including Newmont in the 1960's.

MINERAL RESERVES Detailed information in support of the quoted mineral inventory at the Old Nick is being obtained by the Company. Mr. E. Livgard, B.Sc., P.Eng., in a report dated May, 1982 states that nickel mineralization is "about 120m thick and extends for about 1,500m in an overturned anticline". "The values are in Nickel (0.25%), Cobalt (0.03%) and minor Copper, Silver and Gold." Crown Resources Corp. in an Assessment Report dated June, 1991 states "... Newmont Mining Corp., Nickel Ridge Mines Ltd., and Utica Mines Ltd. have carried out extensive exploration programs, including drilling, that has outlined a minimum of 100,000,000 tons of 0.22% nickel..." Newmont reports that by using a flotation process, nickel recoveries of 75% would be anticipated.

**PROPERTY POTENTIAL** The Property has excellent potential for development as a large-scale +20,000 tonnes of ore per day open-pit operation with either:

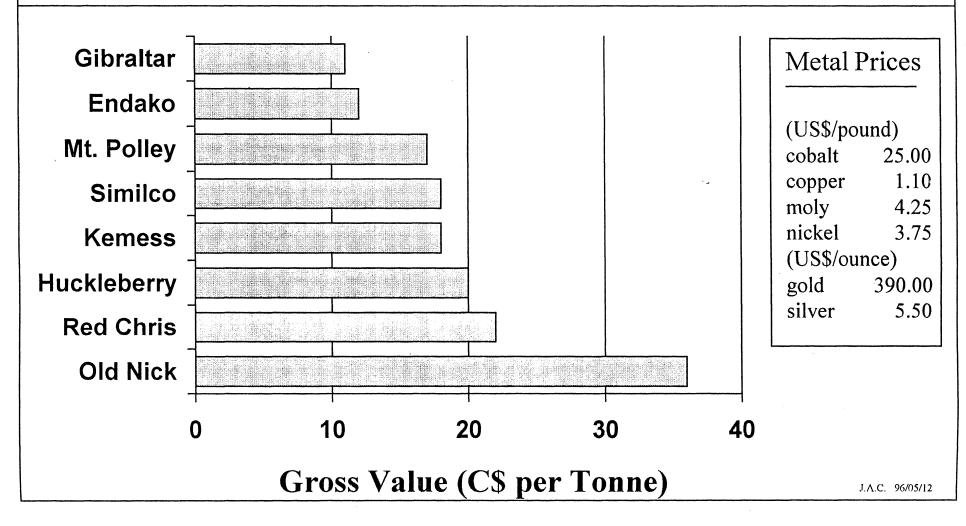
- an agitated leach, solvent-extraction and electrowinning plant, or
- **a** heap leach, solvent-extraction and electrowinning plant.

Recent advances in bio-leaching and ferric chloride leach applications have demonstrable applications at Old Nick. The property location, in British Columbia's driest and warmest region (semi-desert), is a positive attribute for whole-rock leach operations. Soil and silt geochemical surveys and geological mapping indicate there is good potential to expand the known nickel cobalt mineral reserves.



# **British Columbia Mineral Deposits**

Ranked by Deposit Gross Unit Metal Value



#### **British Columbia Mineral Deposits** Deposit Gross Unit Metal Value (C\$/Tonne) By: J.A. Chapman 5/12/96 14:28 **Contained Metal** Copper (%) Cobalt (%) Gold (gpt) Moly (%Mo) Nickel (%) Silver (gpt) Old Nick 0.015 0.220 Similco 0.456 0.127 1.724 0.513 Huckleberry 0.062 0.014 2.812 Mount Polley 0.300 0.417 Gibraltar 0.300 0.009 0.220 0.630 Kemess Red Chris 0.480 0.370 Endako 0.090 Metal Price (US\$) 25.00 12.54 1.10 4.25 3.75 0.18 Metal Price (C\$) 1.51 34.25 17.18 5.82 5.14 0.25 **Gross Value** C\$/Tonne Old Nick 0.00 11.30 0.00 0.00 24.86 0.00 36.16 0.00 2.18 0.00 Similco 15.12 0.00 0.43 17.72 0.00 1.07 Huckleberry 17.01 1.79 0.00 0.69 20,56 7.16 Mount Polley 9.95 0.00 0.00 0.00 0.00 17.11 9.95 0.00 0.00 0.00 1.15 11.10 Gibraltar 0.00 7.29 Kemess 0.00 10.82 0.00 0.00 0.00 18.12 15.91 0.00 6.36 0.00 0.00 0.00 22.27 Red Chris

0.00

11.53

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0.00

11.53

0.00

0.00

Endako

### Gold City Mining Corporation

Suite 600 - 750 Cambie Street ❖ Vancouver, B.C., V6B 5E5 ❖ Telephone: (604) 682-7677 ❖ Facsimile: (604) 682-0089

### **NEWS RELEASE**

VSE:GCP NOVEMBER 1, 1995 #95-15

FOR IMMEDIATE RELEASE

# OLD NICK DEPOSIT METALLURGICAL TEST RESULTS

**Vancouver, B.C.,** John Chapman, President, reports additional positive results from agitated leach tests on Old Nick deposit samples containing nickel and cobalt (refer to News Release #95-13 of September 21, 1995 for prior results).

Sample Number	Rock Type	Grade Ni% / Co%	Particle (% -75μ)	Retention (hours)	Nickel (% extracted)	Cobalt (% extracted)
ON-1	Quartzite	0.15 / 0.02	75	25	81	80
ON-2	Quartzite	0.16 / 0.01	91	48	92	60
ON-3	Dunite	0.22 / 0.01	81	48	87	76

Results indicate that there may be potential to leach this very large surface-exposed sulfide nickel/cobalt deposit (may be the largest in British Columbia). The Deposit is located within three kilometres of mainline power and natural gas, and immediately adjacent to Highway #3 at the Town of Bridesville in Southern British Columbia. The Deposit may be large enough to support an openpit operation and an adjacent 20,000 tonne per day whole rock leaching plant.

The bench scale agitated leach tests were run under weak acidic conditions at atmospheric pressure. Leaching tests are being conducted in Burnaby, B.C. by International Water Solutions Corporation. The leach solutions will be further tested, by other laboratories, using SX (solvent extraction), precipitation and EW (electro-winning) methods to determine the viability of these modern methods to produce marketable nickel and cobalt from Old Nick.

Negotiations are being conducted between Gold City and a major company, toward an arrangement whereby the major could become involved in further exploration and development of the Old Nick property.

The Old Nick deposit is controlled by the Rock Creek Gold Trend Joint Venture. The Joint Venture consists of Gold City Mining Corporation (49%), Phoenix Gold Resources Ltd. (25.5%) and Sway Resources Inc. (25.5%).

Gold City Mining Corporation shares are traded under the ticker symbol GCP on the Vancouver Stock Exchange.

### Gold City Mining Corporation

Suite 600 - 750 Cambie Street ◆ Vancouver, B.C., V6B 5E5 ◆ Telephone: (604) 682-7677 ◆ Facsimile: (604) 682-0089

VSE:GCP SEPTEMBER 21, 1995

#### **NEWS RELEASE**

#95-13

FOR IMMEDIATE RELEASE

#### OLD NICK DEPOSIT, METALLURGICAL TEST RESULTS

Vancouver, B.C., John Chapman, President reports positive results from agitated leach tests on Old Nick deposit samples containing nickel and cobalt. Results indicate that there may be potential to leach this very large surface exposed sulfide deposit, located adjacent to Highway 3 at Bridesville in Southern British Columbia.

The bench scale agitated leach tests were run under weak acidic conditions at atmospheric pressure on a 10 kilogram sample ground to 65% minus 45 microns (325 mesh). At 25 hours, 81% of the nickel and 80% of the cobalt were released to solution. Two similar tests have just been completed on samples from different parts of the Old Nick deposit and leach solution assays are pending. Also, column leach tests will commence next week on a sample crushed to minus one centimetre diameter. Leaching tests are being conducted in Burnaby, B.C. by International Water Solutions Corporation. The leach solutions will be further tested, in other laboratories, using SX (solvent extraction), precipitation and EW (electrowinning) methods to determine the viability of these modern methods to produce marketable nickel and cobalt from Old Nick.

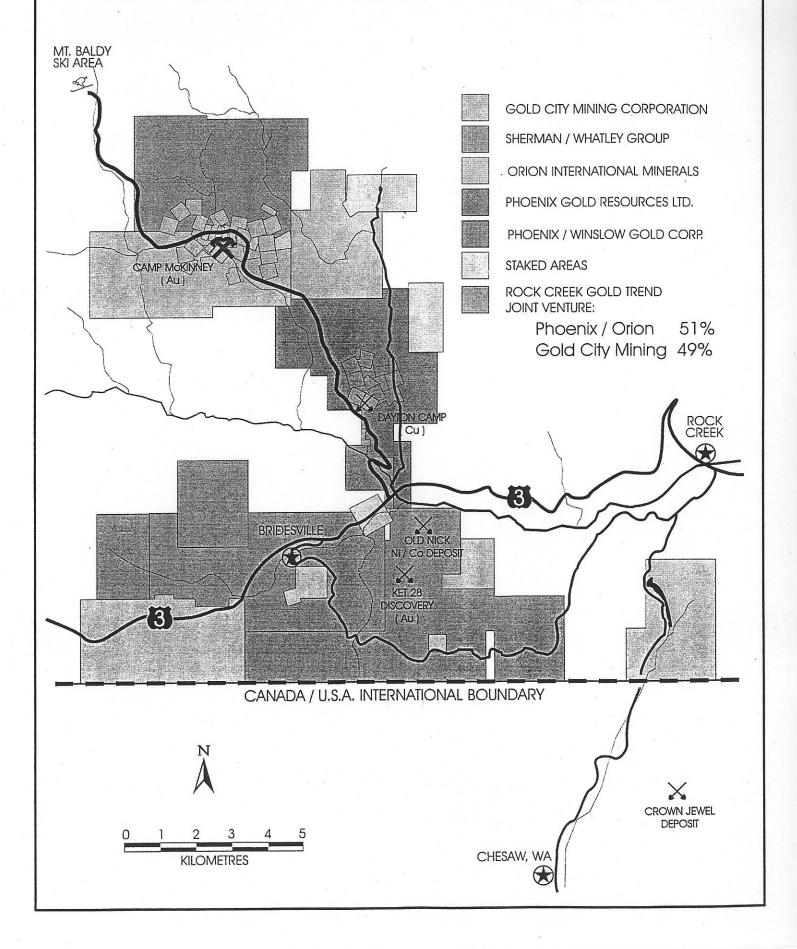
The Old Nick is a unique sulfide deposit that has been estimated by previous operators to contain in excess of 100 million tons grading 0.22% nickel and 0.015% cobalt. At present metal prices the contained gross metal value is \$3,000,000,000 (\$30 per ton). Gold City management estimates that there is a mineral inventory of 30,000,000 tonnes based upon drilling and trenching done by: Utica Mines Ltd. (1966), Copper Ridge Mines Ltd. (1966), and Newmont Mining Corporation of Canada Limited (1967 & 1968). There is excellent potential to expand the mineral inventory down dip and along strike. In a May 1968 report by Newmont, the authors describe the deposit as follows: "Pentlandite mineralization was found in a pyrometasomatic quartzite band, 2,600 feet long and approximately 400 feet wide, and in adjacent peridotite-dunite dykes....nickeliferous zones grading 0.15% to 0.25% nickel, were found to be remarkably uniform and continuous within the quartzite horizon". In report IR71-34 (1971) prepared by the Department of Energy Mines and Resources, Ottawa, Canada, the authors determined that the nickel occurs as pentlandite in very small grains (average 35 microns).

A mid October meeting has been scheduled between Gold City and a major company, to discuss an arrangement whereby the major could become involved in the further exploration and development of the Old Nick property.

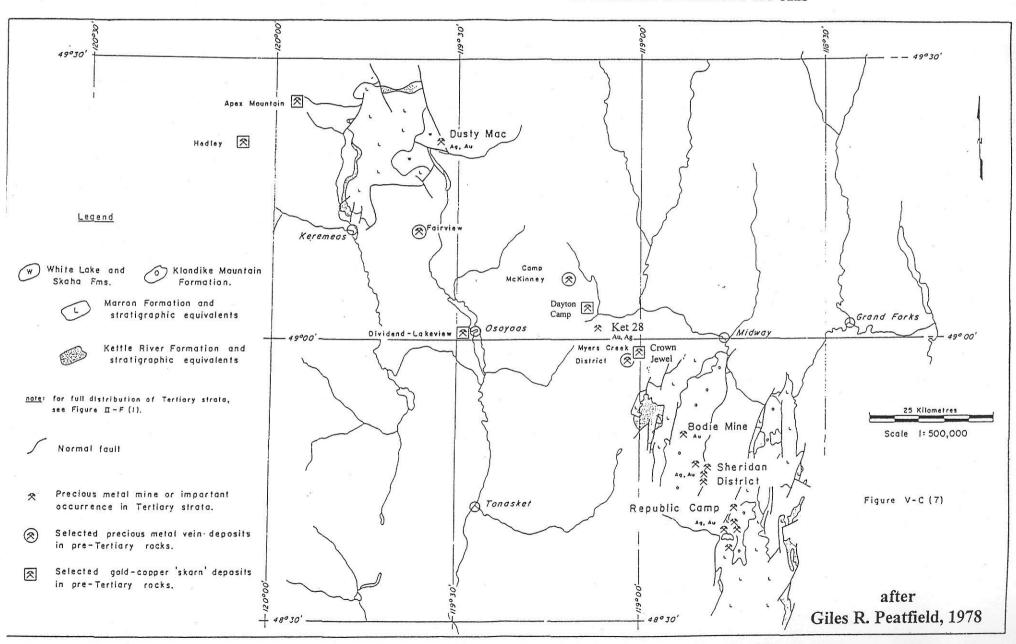
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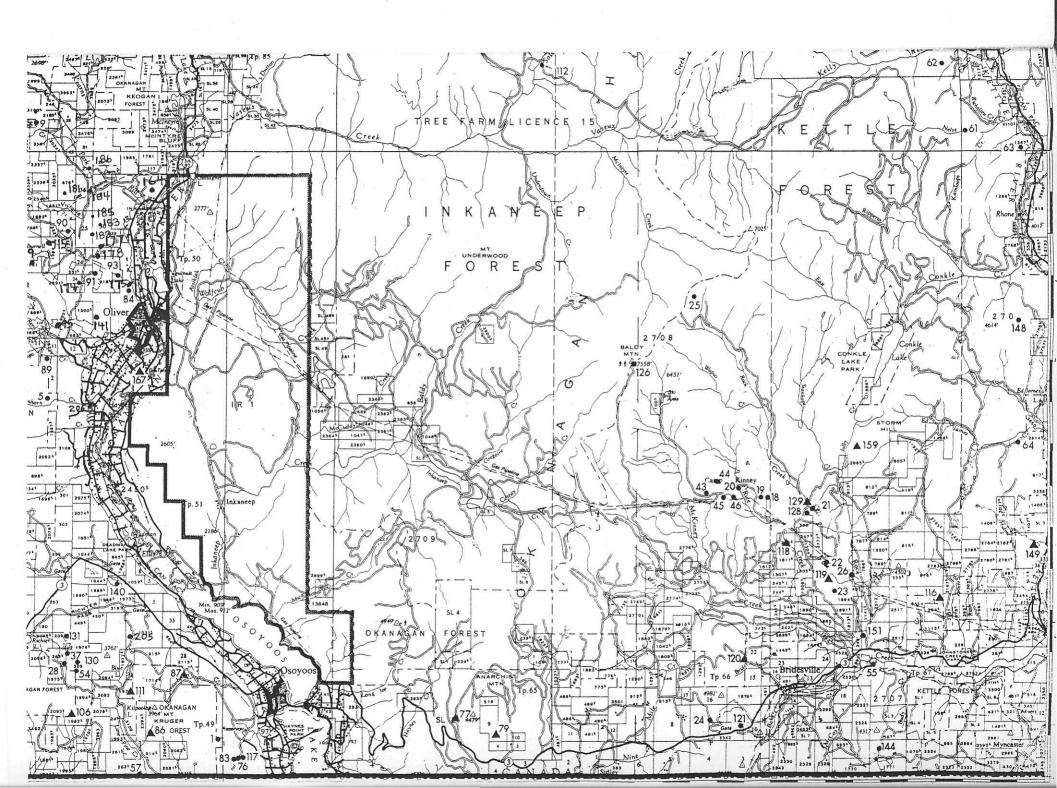
Gold City Mining Corporation shares are traded under the ticker symbol GCP on the Vancouver Stock Exchange.

# THE ROCK CREEK GOLD TREND



### DISTRIBUTION OF PRECIOUS METAL DEPOSITS IN TERTIARY ROCKS





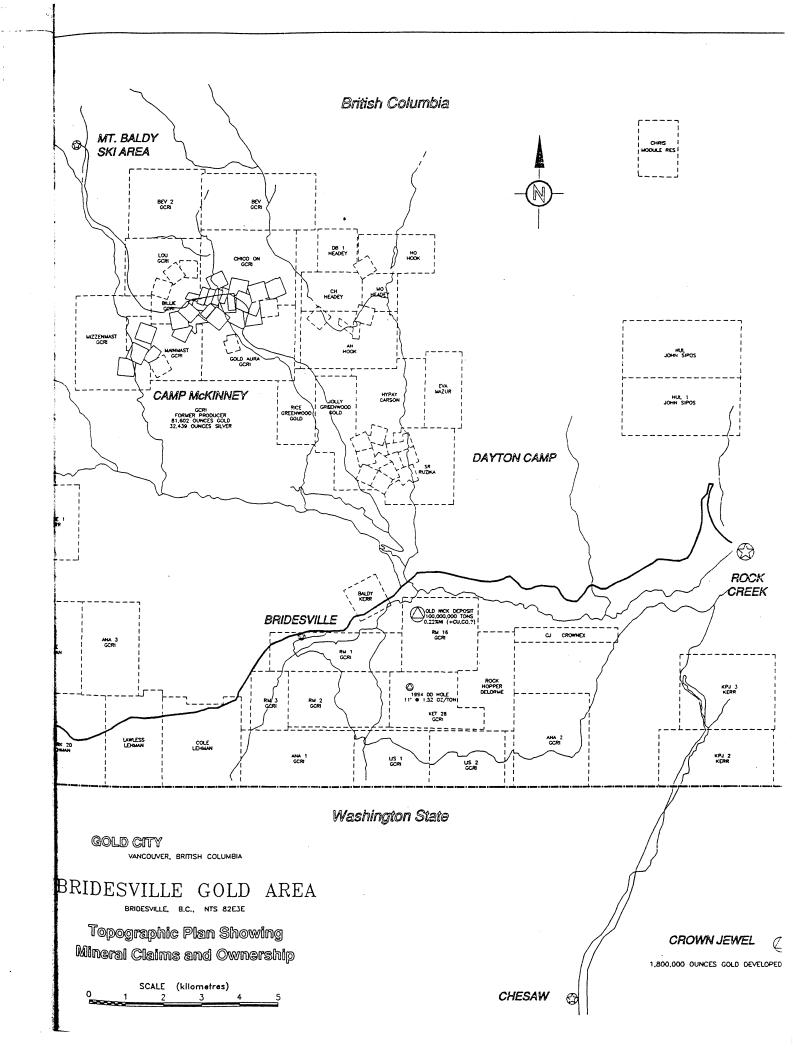
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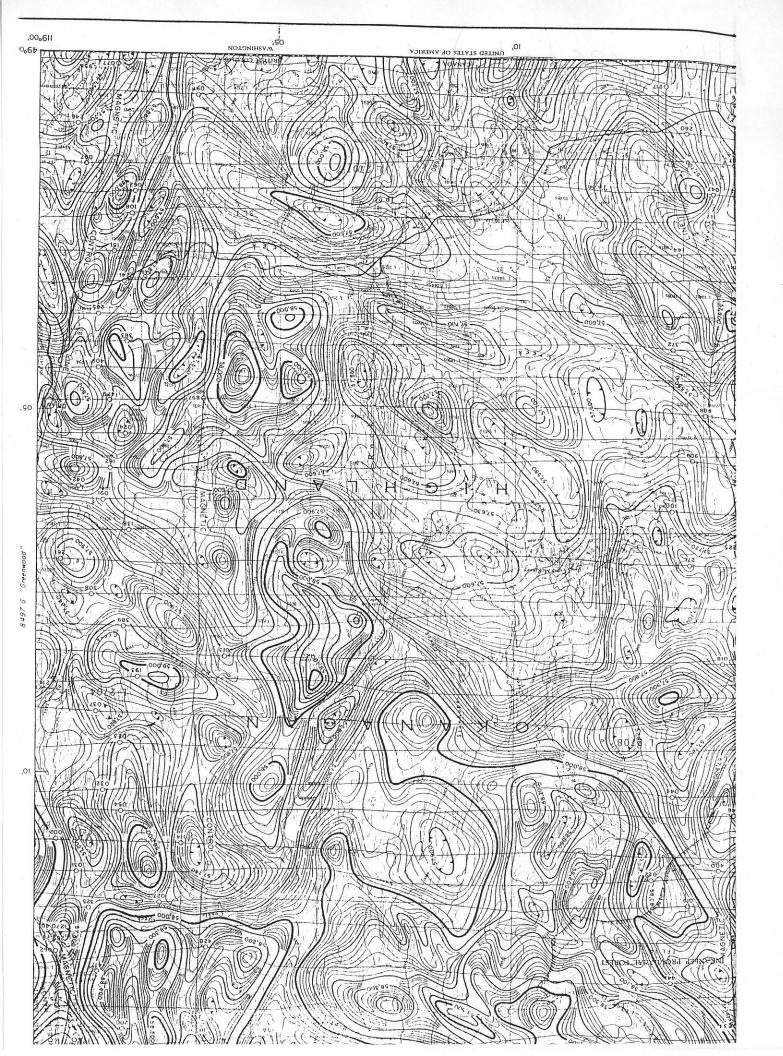
#### MINFILE / pc MINFILE NUMBER INDEX GEOLOGICAL SURVEY BRANCH - MINERAL RESOURCES DIVISION MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

PAGE: REPORT: RGEN

MINFILE NO	DIVIDEND-LAKEVIEW(L.1589,1899) TINHORN (L.726) MORNING STAR (L.443) STEMWINDER (L.384) FAIRVIEW (L.5565) FONTENOY (L.752) WATERLOO CARIBOO-AMELIA VICTORIA (L.218) DAYTON (L.1953) WAR EAGLE (L.1879) ANARCHIST CHROME BRIDON ROCK CREEK PLACER JOE 7 JOE 5 GOLD HILL EUREKA (L.242) SAILOR (L.766) MINNE HA-HA (L.680) OLD 9 OLD NICK WHITE KNIGHT (L.1081) CROWN POINT (L.2448) ROHNE FR. (L.2676) SHELL NO.17 CHUKAR GYPO (L.3098S) SILVER COIN COPPER COIN SMUGGLER SUSIE (L.1917) STANDARD DIVINE EMPIRE (L.611) KOH-I-NOOR QUEEN MARY YELLOW VALLEY MOUNT KRUGER MARS PASS FEDERAL (L.2030s) ROCK CREEK MOLKA (L.2675) BALDY HOMESTAKE (L.1892) COBO RAY NIKKI YOUNKIN MCKINNEY GOLD STANDARD OGOFAN BUL 19 (OLD 10) WALT 32 (OLD 3) SPOTTED LAKE CONTACT LAKE EK JO DANDY (L.2120)	COMMODITIES	STATUS	NTS MAP	LATITUDE	LONGITUDE ZON	E NORTHING EAS'
082ESW001	DIVIDEND-LAKEVIEW(L.1589,1899)	AU AG CU PB ZN	PAPR	082E04E	49 00 42	119 30 00 11	5431545 317
082ESW005	TINHORN (L.726)	AU AG PB CU	PAPR	082E04E	49 09 00	119 36 24 11	5447183 309
082ESW006	MORNING STAR (L.443)	AU AG PB ZN	PAPR	082E04E	49 11 26	119 36 50 11	5451700 309
082ESW007	STEMWINDER (L.384)	AU AG PB ZN CU	PAPR	082E04F	49 11 47	119 37 16 11	5452375 309
082ESW008	FAIRVIEW (L.556S)	AU AG PB CU ZN SI	PAPR	082E04E	49 12 12	119 38 12 11	
082ESW018	FONTENOY (L.752)	AG AU PB ZN	PAPR	082E03E	49 06 36	119 10 06 11	5441729 341
082ESW019	CARTROO AMETIA	AU AC DE ZN CU	PAPR	082E03E	49 06 36	119 10 18 11 119 10 58 11	5441736 341: 5442400 340
082ESW020	VICTORIA (L. 218)	AU AG PR CU ZN	PAPR	082E03E	49 06 37	119 10 36 11	5442400 340° 5441306 343°
082ESW022	DAYTON (L.1953)	CU AG AU PB ZN	PAPR	082E03E	49 05 00	119 08 06 11	5438695 344:
082ESW023	WAR EAGLE (L.1879)	AU AG CU	PAPR	082E03E	49 04 24	119 07 48 11	5437574 344
082ESW024	ANARCHIST CHROME	CR ,	PROS	082E03E	49 01 20	119 11 15 11	5432012 3400
082ESW025	BRIDON	CR	PROS	082E03E	49 11 00	119 13 00 11	5449982 3384
082ESW026	ROCK CREEK PLACER	AU	SHOW	082E03E	49 04 48	119 07 12 11	5438294 345:
082ESW028	JOE /	CO	SHOW	082E04E	49 02 30	119 35 36 11 119 35 30 11	5435108 3104 5435660 3104
082ESW043	GOLD HILL	AII PR ZN AG	PAPR	082E04E	49 02 48	119 12 24 11	5441995 3389
082ESW044	EUREKA (L.242)	AU AG PB ZN CU	PAPR	082E03E	49 07 00	119 12 00 11	5442536 3394
082ESW045	SAILOR (L.766)	AU PB ZN CU	PAPR	082E03E	49 06 36	119 11 42 11	5441785 3398
082ESW046	MINNE HA-HA (L.680)	AU PB	PAPR	082E03E	49 06 36	119 11 24 11	5441774 340:
082ESW054	OLD 9	CU	SHOW	082E04E	49 04 48	119 34 06 11	5439307 3124
082ESW055	OLD NICK	NI CU	PROS	082E03W	49 02 30	119 06 10 11	5433998 346:
082ESW057	WHITE KNIGHT (L.1081)	AG AU PB CU	SHOW	082E04E	49 00 00	119 32 48 11	5430361 313
082ESW064	CROWN POINT (L.2448)	AG PB ZN AU CU	CHOM	082E03E	49 08 00	119 01 00 11 119 29 06 11	5444017 3528 5430768 3183
082ESW077	SHELL NO. 1	CU ZN	SHOW	082E03W	49 00 18	119 29 06 11	5432309 3280
082ESW079	SHELL NO.17	CU PB ZN	SHOW	082E03W	49 00 54	119 20 00 11	5431527 329
082ESW083	CHUKAR	CU	SHOW	082E03W	49 00 18	119 20 24 11	5430430 328
082ESW084	GYPO (L.3098S)	SI FL	PROD	082E04E	49 11 45	119 33 30 11	5452157 3136
082ESW086	SILVER COIN	CA	SHOW	082E04E	49 00 48	119 32 24 11	5431827 314.
082ESW087	COPPER COIN	CU	SHOW	082E04E	49 02 18	119 31 12 11	5434557 3158
082ESW089	SMUGGLER	AU AG PB ZN	PAPR	082E04E	49 10 00	119 36 30 11	5449040 3098 5454725 3109
082ESW090	SUSIE (L.1917)	AG AG PB ZN CG SI	DADD	0825045	49 13 03	119 35 48 11 119 35 00 11	5453053 3118
082ESW091	DIVINE	AU AG	PROS	082E04E	49 11 00	119 36 00 11	5450871 3105
082ESW093	EMPIRE (L.611)	AG AU	PAPR	082E04E	49 12 00	119 33 54 11	5452637 3133
082ESW095	KOH-I-NOOR	AG AU	PAPR	082E04E	49 11 00	119 36 00 11	5450871 3105
082ESW097	QUEEN MARY	AG AU	PAPR	082E04E	49 11 30	119 38 30 11	5451903 3075
082ESW098	YELLOW VALLEY	AG AU	PAPR	082E04E	49 11 30	119 38 30 11	5451903 3079
082ESW106	MOUNT KRUGER	NS FD	DEPR	082E04E	49 01 38	119 35 34 11	5433494 3104
082ESW108	DACC	CU DR AU AC	PAPR	0825045	49 13 30	119 40 00 11 119 33 12 11	5455672 3058 5433712 3133
082ESW111	FEDERAL (L.2030s)	AG AU PB ZN CU	PROS	082E04E	49 12 52	119 36 11 11	5454350 3104
082ESW116	ROCK CREEK	AB	SHOW	082E03E	49 04 18	119 04 00 11	5437260 3490
082ESW117	MOLKA (L.2675)	CU	SHOW	082E03W	49 00 18	119 28 54 11	5430760 3185
082ESW118	BALDY	AU AG CU PB ZN MO	PROS	082E03E	49 05 30	119 09 36 11	5439674 3423
082ESW119	HOMESTAKE (L.1892)	AU AG CU	SHOW	082E03E	49 04 36	119 08 00 11	5437951 3442
082ESW120	COBO	CU NI	SHOW	082E03E	49 02 36	119 12 00 11	5434385 3392
082ESW121	NIKKI	CU DR ZN AG	SHOW	0825035	49 01 00	119 01 00 11 119 37 36 11	5431048 3525 5430746 3078
082ESW125	YOUNKIN MCKINNEY	MO :	SHOW	082E03W	49 09 54	119 15 12 11	5448023 3357
082ESW128	GOLD STANDARD	PB AU	PAPR	082E03E	49 06 18	119 08 48 11	5441128 3433
082ESW129	OGOFAN	CU ZN AG AU	SHOW	082E03E	49 06 30	119 08 48 11	5441498 3433
082ESW130	BUL 19 (OLD 10)	CU AG MO FE	PROS	082E04E	49 02 36	119 35 06 11	5435273 3110
082ESW131	WALT 32 (OLD 3)	CU AG MO FE	PROS	082E04E	49 03 12	119 35 30 11	5436401 3106
082ESW140	SPOTTED LAKE	MS	SHOW	082E04E	49 04 30	119 33 36 11	
082ESW141 082ESW144	MOLKA (L.2675) BALDY HOMESTAKE (L.1892) COBO RAY NIKKI YOUNKIN MCKINNEY GOLD STANDARD OGOFAN BUL 19 (OLD 10) WALT 32 (OLD 3) SPOTTED LAKE EK	OR TH	SHOW SHOW	082E04E	49 11 10 49 00 40	119 34 40 11 119 06 00 11	5451125 3121 5430596 3464
082ESW144	JO DANDY (L.2120)	AG PB ZN AU	SHOW	082E03E	49 10 48	119 00 00 11	5449201 3531
082ESW149	ROCK CREEK	CR NI AG PT	PROS	082E03E	49 04 58	119 00 34 11	5438382 3533
082ESW151		ZN PB	SHOW		49 03 12	119 06 36 11	5435310 3458
082ESW159	JOLLY CREEK	CR	SHOW	082E03E	49 08 00	119 07 00 11	5444216 3455
082ESW160	KRUGER MT	NS	SHOW		49 04 00	119 40 00 11	5438073 3052
082ESW164		UR	DEPR		49 14 10	119 32 45 11	5456604 3146
082ESW167		AE GS	SHOW		49 10 00	119 33 00 11 119 35 20 11	5448895 3141 5452387 3113
082ESW174 082ESW175		UR TH UR	DEPR SHOW		49 11 50 49 11 50	119 33 30 11	5452312 3136
082ESW177		UR	DEPR			119 34 30 11	5454051 3124
082ESW178	SOUTH WOW LAKE	UR	PROS		49 12 30		5453591 3123

<sup>\*</sup> Contains 8 or more commodities





RUN DATE: 10/20/95 RUN TIME: 14:44:02

### MINFILE / pc MASTER REPORT GEOLOGICAL SURVEY BRANCH - MINERAL RESOURCES DIVISION MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

PAGE: REPORT: RGEN0100

MINFILE NUMBER: 082ESW055

NATIONAL MINERAL INVENTORY: 082E3 Ni1

NAME(S): OLD NICK, NICKEL, MISSION I, NICKEL RIDGE

STATUS: Prospect NTS MAP: 082E03W LATITUDE: 49 02 30 LONGITUDE: 119 06 10 ELEVATION: 0930 Metres MINING DIVISION: Greenwood

UTM ZONE: 11 NORTHING: 5433998

EASTING: 346325

LOCATION ACCURACY: Within 500M

COMMENTS: Approximate centre of workings (Assessment Report 1243).

COMMODITIES: Nickel

Copper

MINERALS

SIGNIFICANT: Pentlandite ASSOCIATED: Quartz

Pyrrhotite

Chalcopyrite

Pyrite

ALTERATION: Amphibole

Biotite Talc

Chlorite Serpentine Quartz

Tourmaline

Sericite ALTERATION TYPE: Serpentin'zn

Biotite

Chloritic

MINERALIZATION AGE: ISOTOPIC AGE:

DATING METHOD: Unknown

MATERIAL DATED:

DEPOSIT

CHARACTER: Disseminated CLASSIFICATION: Unknown

Stratabound

TYPE: Gabbroid Ni-Cu-PGE SHAPE: Irregular

STRIKE/DIP: 070/30S Metres

TREND/PLUNGE:

DIMENSION: 792 x 122 COMMENTS: Approximate dimensions and orientation; mineralization is not well

delineated.

HOST ROCK

DOMINANT HOST ROCK: Metasedimentary

LITHOLOGY: Serpentinized Dunite

Quartzite Biotite Quartzite **Biotite Schist** Serpentinite

HOST ROCK COMMENTS: Host rocks have been assigned to the Anarchist Group, specific dating

has not been done.

GEOLOGICAL SETTING

TECTONIC BELT: Intermontane

TERRANE: Cache Creek

METAMORPHIC TYPE: Regional

PHYSIOGRAPHIC AREA: Okanagan Highland

RELATIONSHIP: Syn-mineralization GRADE: Greenschist Post-mineralization

INVENTORY

ORE ZONE: DRILLHOLE

CATEGORY: Assay/analysis SAMPLE TYPE: Drill Core COMMODITY

YEAR: 1968

0.2000 Per cent Nickel

COMMENTS: Average/typical Nickel (pentlandite) mineralization in quartzite. REFERENCE: Assessment Report 1243

ORE ZONE: TOTAL

CATEGORY: Unclassified

YEAR: 1960

QUANTITY: COMMOD ITY

90710000 Tonnes

GRADE 0.2000 Per cent

COMMENTS: A mineral inventory has been identified in the 1960s.

REFERENCE: T. Schroeter, Monthly Report, June 1994.

CAPSULE GEOLOGY

The Old Nick nickel showings are 4 kilometres east-northeast of Bridesville, astride the old Great Northern Railway grade. The showings have been prospected for nickel and precious metals and development includes trenching, shallow shafts and diamond drilling. The showings occur in rocks of the Anarchist Group. Mapping has identified seven map units that trend roughly east-northeast. First is first to medium grained bigits which who the diamond that the diamond that the state of th

is fine to medium grained biotite schist with quartzite layers that form up to 15 per cent of the rock. The included quartzite occurs as either 2 to 30 centimetre or 3 to 4 metre thick layers. The mineral

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# MINFILE / pc MASTER REPORT GEOLOGICAL SURVEY BRANCH - MINERAL RESOURCES DIVISION MINISTRY OF ENERGY, MINES AND PETROLEUM RESOURCES

PAGE: 2 REPORT: RGEN0100

CAPSULE GEOLOGY

assemblage of the biotite schist includes biotite, quartz, plagioclase with minor hornblende, tourmaline and sphene. Second is a metasediment with minor layers of epidote and zoisite and the whole unit is estimated to be 122 metres thick. The metasediment is essentially massive tremolite with remnant pyroxene and includes minor amounts of sericite, chlorite and chrome mica (Cr-phengite). Also included is disseminated pyrite, usually 1 to 2 per cent and locally occurring in zones of up to 20 per cent. This unit contains the majority of the nickel mineralization. Third is a quartzite-schist unit, similar to the first, however, here the quartzite forms 60 per cent of the rock. Fourth is a massive greenstone that is probably metavolcanic rock. Fifth is a banded quartzite that contains thin layers of biotite and chlorite. Finally, there are two associated, altered ultramafic units. They are both comprised of antigorite with accessory talc, anthophyllite and tremolite. The protolith has been identified as dunite. The rock is massive and contains some disseminated pyrite, pyrrhotite and pentlandite. The serpentinite has' been broken out into two units, based on crosscutting relationships, as 'sills' and 'dykes'. The dykes follow northwest trending interconnected fracture/fault zones that cross stratigraphy and the property. The serpentinite occurs in the thick metasediments (Unit 2) as zones 0.10 to 10 metres thick (after Coope, J.A. et al., 1968; Eastwood, G.E.P, 1968). These serpentinites may actually be thin fault slices of ultramafic material, due to their structural control as described below. This would be more consistent with the regional occurrence of serpentinite in the area.

The layered rocks are folded into a subhorizontal antiform with the axial plane trending east northeast and dipping about 30 degrees south. Minor folds are open with a 1/3 to 1/2 metre wavelength and superimposed centimetre scale crenules indicating upright tops. Subvertical faults transect the property. The major set strikes west-northwest, controlling the serpentinite emplacement. A second, minor set strikes northeast and offsets the earlier major faults and serpentinite.

Nickel mineralization is associated with pyrrhotite and pentlandite. These sulphides are found as widely spread disseminations in the serpentinite and the major metasediment (Unit 2) package. Pentlandite has been identified as microscopic grains intergrown with pyrrhotite and pyrite. There is no correlation between pyrite and nickel mineralization. Diamond drill hole core assay results show a range of 0.01 to 0.15 per cent nickel content in the serpentinite. Assay results from the metasediment (Unit 2) package range from 0.07 to 0.26 per cent nickel (after Coope, J.A. et al., 1968). The nickel mineralization is fairly uniform throughout the area examined, having an average range of 0.15 to 0.20 per cent. The mineralized area examined is approximately 800 by 120 metres, following the metasediment (Unit 2) package. Metallurgical testing of the metasediment in 1968 yielded nickel recoveries of 56 per cent. At that time, Newmont Exploration Ltd. decided the property was uneconomic and dropped its option.

Exploration of the Old Nick showings has been ongoing for many years. The claims were originally staked in 1955 and prospected for several years. The claims were allowed to lapse and the ground was

Exploration of the Old Nick showings has been ongoing for many years. The claims were originally staked in 1955 and prospected for several years. The claims were allowed to lapse and the ground was restaked in 1966 as the Old Nick Group. Aggressive programs of diamond drilling, trenching, mapping, geochemical and geophysical surveys were executed by Utica Mines Ltd., Copper Ridge Mines Ltd. and Newmont Mining Corp. of Canada Ltd. between 1966 and 1968. The development work outlined a potential low grade nickel mineral reserve. A mineral inventory of approximately 90,710,000 tonnes grading 0.2 per cent nickel has been identified (T. Schroeter, Monthly Report, June 1994). Subsequently, various operators have done reconnaissance geochemical, geophysical and radiometric surveys as well as extensive prospecting through to 1989. The showings have been staked as the Nickel and the Mission I claims. At the time of writing the showings remain unstaked.

BIBLIOGRAPHY

EMPR ASS RPT \*1243, 3677, 8087, 8390, 9296, 10547, 13412, 13803, 14863 EMPR AR 1966-192-193; 1967-224-225; \*1968-225-226 EMPR GEM 1972-38; 1982-29; 1985-C13 GCNL #44, 1981 CANMET RPT 71-34 E.S. Gerhard (1971): MSc Thesis, Univerity of Manitoba, Manitoba, "The Old Nick GSC MAP 538A; 15-1961; 5394 EMPR T. Schroeter, Monthly Report, June 1994

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oration stream irborne testing. OD LICK - JUNE 1967 ipanies 10 SAMPLES. Elax 200 Casing 19001 .24 y at the 2 .203 Chloritic 3 .27 g., in a 4 .13 ick and 5 .22 Nickel 12 P10 ./2 sources 8 .05 9 .07 Corp., Chloritic -21 10 .09 Serecitic PII tensive -19 11 .07 Feldspathic Ni 3-28 lbs. -14 12 .18 um of 13 -12 .20 Co. .014 % otation 12 Au. Tr. Ave: 425' .202 % Ni. 15 -17 ./2 385' -225 % Ni. Ag. Tr. 19 .25 .17 Tr 17 .13 15 18 .17 1.15 e-scale Tr 19 .17 Tr 20 .215 To 21 -27 Tr Tr 25 .30 Tr 24 .36 Chlor. 25 -52 26 -24 27 -21 s have 28 -25 29 -23 ımbia's 30 .146 k leach 3/ -20 Chlor 32 .21 te there Seric 33 .20 34 .21 35 .27 . 22 Feld .22 ·27 Serie Chlor ·25 425 ' 41 .215 42 Tr Feld. Tr Serie. 45 14 46 -154 ./2 Greenstone 48 -14 Tr. 19050 Tr Graphilic 77 .01 78 .03 74 Feld. 80 .05 COPPER RIDGE MINES LTD. Chler 81 .06 82 .03 VANCOUVER, B.C. NICKEL RIDGE PROPERTY Depth - 593.5' ROCK CREEK, B.C SECTION 800' EAST CALC. 1" = 50" DRG. No. RAWN BY CH.D. RACED BY: CHD ATE: June 5 1967

Relatively deep diamond drill holes (DDHN 1 - DDHN 5)

were drilled by Copper Ridge Mines in 1967. Holes DDHN 1

and DDHN 2 intersected nickeliferous quartzite and give a

good picture of mineralization at depth. Hole DDHN 1,

collared in nickeliferous quartzite, indicates a minimum apparent

width of 420 feet of mineralized quartzite, grading 0.195% nickel.

Typically, grades range from 0.07% nickel to 0.26% nickel. One

10 foot section returned an anomalous 0.52% nickel. Hole

DDHN 2 intersected an apparent width of 272 feet of nickel
iferous quartzite with grades ranging from 0.05% nickel to

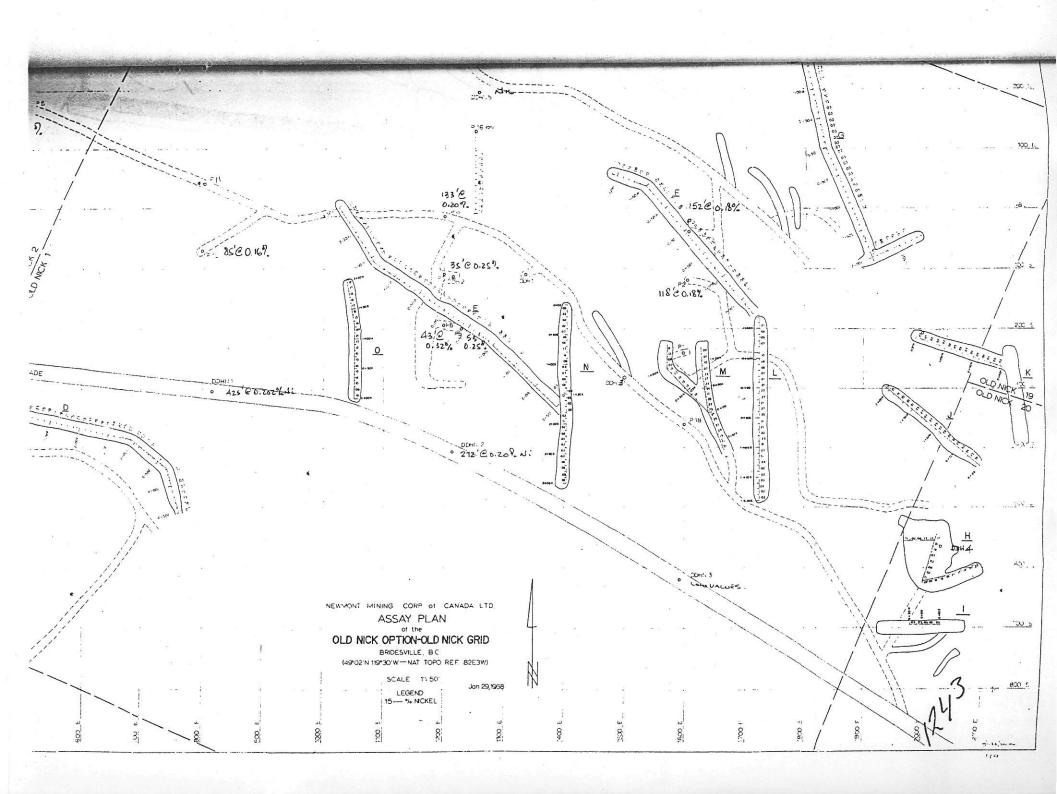
0.25% nickel. Holes DDHN 3, DDHN 4, and DDHN 5 failed to

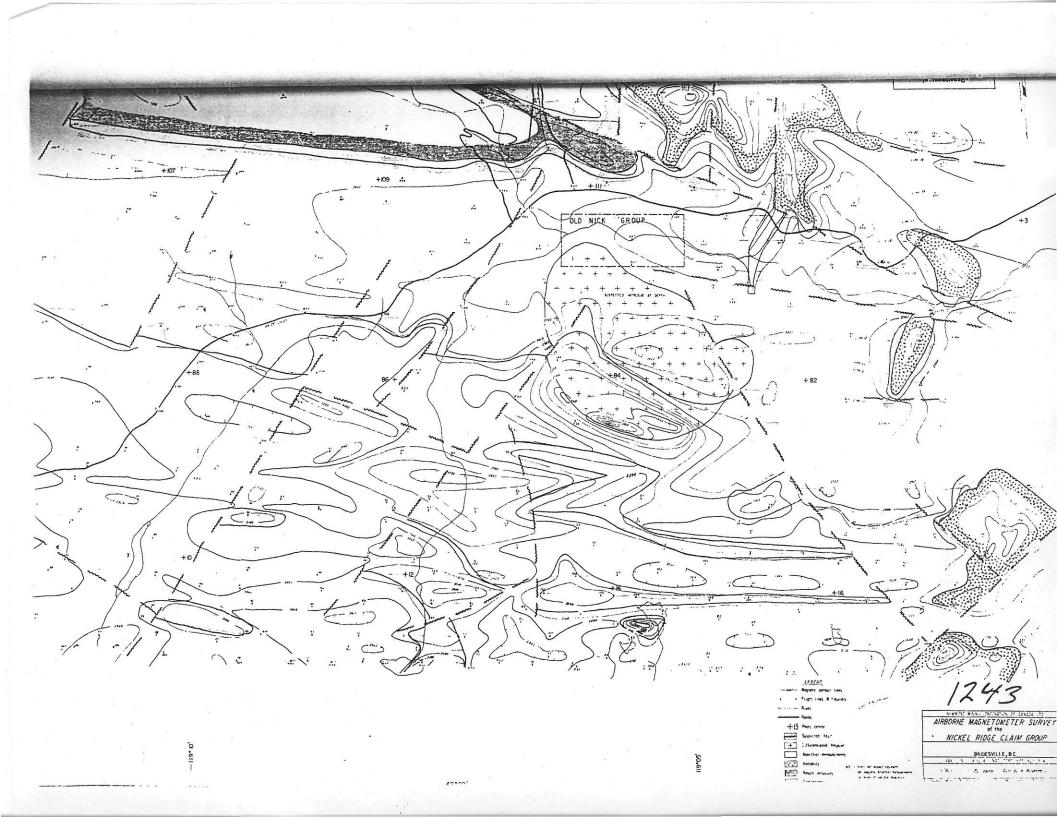
intersect significant mineralization, hole DDHN 3 being

lost before reaching its projected target.

A number of percussion drill holes, 40 feet to 200 feet in length, were drilled by Copper Ridge Mines with an Atlas Copco O.D. drill (Figs. 3 and 4). Holes P 2, P 3, F 5 to P 10, P 12, and P 16 intersected significant nickel mineralization in quartzites and holes P 19 to P 23 intersected nickel bearing peridotite dykes. Assay results are summarized below:

Hole Number		Nickel Grades
P 2 P 3 P 5 P 6		0.18% Ni/22' - 140' 0.175% Ni/5' - 157' 0.082% Ni/3' - 103' 0.196% Ni/12' - 145'
P 7 P 8		0.25% Ni/5' - 40' 0.32% Ni/17' - 60'
P 9	1	0.245% Ni/7' - 60'
P 10 P 12	i	0.164% Ni/15' - 100' 0.171% Ni/12' - 125'
P 16 (Flat hole - Fig. 4)		0.152% Ni/32' - 137'
P 19		0.085% Ni/120' - 200'
P 20	•	0.22% Ni/10' - 80'
P 21		0.19% Ni/30' - 70'
P 22		0.214% Ni/2' - 95'
P 23		0.205% Ni/110' - 130'





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INTRODUCTION

#### Property

The sample submitted by Arctic Gold & Silver Mines Limited is from a nickel prospect, known as the "Old Nick" property, and is located in the Greenwood Mining Division, near the town of Bridesville, B.C. The latter is 25 miles east of Osoyoos in the Okanagan or 277 miles by road from Vancouver. The tonnage of the mineralized area is estimated at over 100 million tons. The grade of the deposit averages 0.22% Ni, but this figure might be increased by selective mining according to the company's geological report.

#### Purpose of Investigation

The investigation was requested by Mr. Egil Livgard, Managing

Director, Arctic Gold & Silver Mines Limited, 1300 Marine Building, 355 Burrard

Street, Vancouver 1, B.C. Mr. Livgard was interested in a feasibility study

on the concentration of the nickel minerals for subsequent bacteriological

leaching. The latter was to be carried out by the B.C. Research Council. The

present investigation was aimed at finding the best method for producing

concentrates of optimum grade and recovery.

#### Shipment

On September 24, 1970, six bags of lump ore weighing 550 lbs were received from the company for the investigation. The shipment was sent by Mr. Livgard.

#### Sampling and Analysis

All the sample was crushed to minus one inch and a few representative fragments were selected for minerological examination. The remainder was reduced to minus 10 mesh and a head sample was riffled out for chemical analysis.

#### TABLE 1

#### Chemical Analysis of Head Sample\*

Nickel (Ni) - 0.23% Iron (Fe) - 4.77% Sulphur (S) - 0.65% Insoluble - 45.1%

\* From Internal Report MS-AC-70-1013.

A semi-quantitative spectrographic analysis on a portion of the head sample indicated the presence of the following elements listed in their approximate order of decreasing abundance.

#### TABLE 2

#### Semi-Quantitative Spectrographic Analysis of

#### Head Sample\*

I - Si, Ca, Mg, Fe (> 1.0%)
II - Ni, Al, Cr (1.0 - 0.01%)
III - Cu, Mn, Sn, Ti (< 0.01%)</pre>

\* From Internal Report MS-AC-70-944.

#### MINERALOGICAL EXAMINATION\*

A portion of the head sample and several representative pieces of rock were sent to the Mineralogy Section of the Mineral Sciences Division for identification of the minerals and determination of their grain sizes and textural relationships. Excerpts from the report on this work are included here for convenience.

<sup>\*</sup> From Investigation Report IR 71-5 by D. Owens, January 14, 1971.

#### Summary

"Mineralogical studies made on a sample of nickel ore from the Old Nick nickel property, show that the ore is composed essentially of a serpentinized mafic rock, in which are disseminated small amounts of iron oxides and nickel-iron sulphides. The nickel is present largely as pentland small amounts of mackinawite and traces of valleriite account for the remain Other minerals identified in the ore include pyrrhotite, magnetite, chromite geothite, marcasite, molybdenite, ilmenite, hematite, pyrite, chalcopyrite, olivine (forsterite), amphibole, serpentine, calcite, asbestos, dolomite, and feldspar.

#### Textures of the Ore Minerals

The ore minerals in the hand specimens tend to occur in two basic forms: those associated with the fibrous amphibole are typically elongate or acicular, whereas those associated with the serpentine and olivine are more equidimensional.

#### Nickel-bearing Minerals

Three nickel-bearing minerals were identified in the ore: pentlar mackinawite and vallerite, with the pentlandite greatly predominating.

Routine electron microprobe analyses were made on all the other ore and gangue minerals to determine if any of them contained trace amounts of nicket the results were negative in all cases, except for some of the pyrrhotite.

The pentlandite (Ni, Fe, Co)<sub>9</sub>S<sub>8</sub> is present essentially as inclusion pyrrhotite and to a lesser extent in magnetite and chromite. Minute amounts of pentlandite also occur as combined grains with pyrrhotite, magnetite and gangue. The pentlandite grains vary from about 5 to 400 micro

valleriite are very small, and range from about 5 to 35 microns in size. Two types of valleriite appear to be present in the ore. The first is a nickel-copper variety occurring as a few inclusions in magnetite and pyrrhotite. The nickel content of the valleriite, based on electron microprobe studies, is slightly less than four per cent; the existence of a nickel-bearing valleriite has not been reported previously. The second type of valleriite consists of very minor disseminations in gangue. These appear to be simply an iron-rich variety, because neither nickel nor copper was detected.

#### Conclusion

Based on the mineralogical examinations of the ore sample, the following conclusions can be drawn: nickel is represented in the ore chiefly by pentlandite, to a much smaller extent by mackinawite, and only insignificantly by vallerite. The low nickel content of the mackinawite, which is present almost entirely as minute inclusions in the pentlandite, will inevitably reduce the grade of any pentlandite concentrate. In addition, much of the pentlandite will be difficult to liberate, from the other minerals with which it is associated, due to its small average particle size.

#### DETAILS OF INVESTIGATION

#### Flotation

This part of the investigation consists of a series of rougher flotation tests with increasing degrees of fineness, concentration of reagent and time of flotation as variables. The best rougher concentrates combined for cleaning.