232

NORTHWESTERN EXPLORATIONS, LIMITED

GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL REPORT

on the

C.J.S. GROUP

Nicola and Kamloops M.D.'s, B. C.

Situated 6 miles northwest of Lower Nicola, B.C.
50 - 120 Southeast

by

Charles S. Ney, P. Eng.

June 9 - Oct. 17, 1958.

TABLE OF CONTENTS

Maps in Folder

(x 5)

same map

Claims to which Assessment Work is being Applied

Claim	Group	Tag No.	Distribution of Work				Yrs Work Claimed
			Geological	Geophysical	Geochem.	Roads	
C.J.S. 8)		308508			$100		1
25)		308525	$ 50		$ 50		1
26)		308526	$100				1
27(	CJS-1	308527	$100				1
28(		308528	$100				1
73)		308587		$ 27	$ 73		1
74)		308588			$100		1
80)		308594			$ 60	$ 40*	1
C.J.S. 1)		308501		$100			1
2)		308502		$ 44	$ 56		1
3)		308503			$100		1
4(	CJS-2	308504			$100		1
5(		308505			$100		1
6)		308506			$100		1
7)		308507			$100		1
9)		308509			$100		1
C.J.S. 10)		308510	$100				1
11)		308511	$100				1
12)		308512	$100				1
13(	CJS-3	308513	$100				1
31(		308531		$ 87	$ 13		1
32)		308532			$100		1
34)		308534			$100		1
36)		308536			$100		1
C.J.S. 21)		308521	$100				1
22)		308522	$100				1
23(	CJS-4	308523		$ 57	$ 43		1
24(		308524			$100		1
29)		308529			$100		1
30)		308530			$100		1
C.J.S. 65)		308565		$ 75		$ 25*	1
66)		308566				$100*	1
67(	CJS-5	308567				$100*	1
68(		308568			$ 75	$ 25*	1
69)		308569			$100		1
70)		308570			$100		1
C.J.S. 49)		308549	$100				1
50)		308550	$100				1
51)		308551	$100				1
52(	CJS-6	308552	$ 50	$ 50			1
57(		308557		$ 37	$ 63		1
58)		308558			$100		1
60)		308560			$100		1
1 Fr.)		316641			$100		1
C.J.S. 59)		308559	$ 50	$ 50			1
61(	CJS-7	308561			$100		1
62)		308562			$100		1

* Road work done by Pooley Bros. Ltd. of Merritt, B.C.

NORTHWESTERN EXPLORATIONS, LIMITED

C.J.S. Group

INTRODUCTION

The C.J.S. Group consists of three separate blocks of claims which partially cover the contact zone between volcanic rocks of the Nicola Group and intrusive granitic rocks of the Guichon batholith. The area is of considerable interest as a copper orebody occurs about 2 miles to the east on the adjacent Craigmont claims near the granite contact. Exploratory work by Northwestern Explorations, Limited in the summer of 1958 included geological mapping, a magnetic survey, and a geochemical survey. A bulldozed road was also constructed to facilitate easy access to the claims.

The geological mapping was done by P.E. Hirst, geologist for Northwestern Explorations, Limited. Line cutters were C. Godwin, J. Barakso, R. St.Claire-Smith, H. Hamilton and A. Bentzen. The geochemical survey was done by R.R. Jalbert and G. Delane; analyst was C. Olsen. The magnetic survey was done by R. Roadhouse with advice and direction from D. Hansen, geophysical consultant for Northwestern Explorations, Limited. The work was supervised initially by J.J. Brummer, P. Eng., finally by C.S. Ney, P. Eng., who edited the maps and material for this report.

LOCATION

The property is centred at latitude 50°13'N; longitude 120°59'W, and is 6 miles northwest of Lower Nicola, B.C. Elevations range from 3800 feet to 5000 feet over the claim area. Topography is in general subdued. Drainage is effected by David Creek, Poison Creek, and Gordon Creek on the west, and by several small tributaries of Stumbles Creek to the east. All the streams join the Nicola River.

ACCESS

The road distance from Lower Nicola is about 9 miles. The first 6 miles are on a good gravel road to the Craigmont property, the remaining 3 miles are on a narrow and steep dirt road. Access to the property can also be had by following an old logging road up Gordon Creek from the west.

FIELD METHODS

Surveys: Four east-west base lines 3000 feet apart were located by surveying along claim location lines. North-south lines were turned off from these base lines at 800 foot intervals. All lines were surveyed by tape and brunton compass. The lines provided a grid for the magnetic and geochemical surveys and facilitated geological mapping.

Geology: Mapping was done on a scale of 1" equals 1000 feet. A base map was prepared using photographs supplied by Photographic Surveys Limited and also from B.C. Air Photographs.

Magnetic Survey: Over the main area, observations were taken at 100-foot intervals along lines 800 feet apart. A portion of the area was covered in greater detail with observations at 100-foot intervals along lines spaced at 400 feet apart.

Data are shown on a contour map. The intensity level is arbitrary. The contour interval is 1000 gammas.

The instrument used was a Sharpe Model A-3 magnetometer manufactured by Sharpe Instruments Limited, with a sensitivity of 26 gammas per scale division.

Geochemical Survey: Soil samples were collected at 100-foot intervals along the east-west base lines and on the north-south lines. Samples were collected from pits made with an entrenching tool. A scoured garden trowel was used to transfer a sample extracted from the top of the B-1 layer of the soil profile to a high wet-strength kraft envelope. The envelope was numbered using a black grease pencil.

The collector noted the location of each sample in a field book. Wet ground conditions, abnormal character of soil and any occurrences of copper mineralization were also recorded. Samples were returned to the field laboratory for drying and subsequent screening to 80 mesh size.

A volumetric scoop containing a standard amount of the 80 mesh material is treated with hydrochloric acid buffered with ammonium citrate and hydroxylamine hydrochloride. Dithizone reagent dissolved in a suitable organic solvent is added in definite small increments and the amount required to give a blue gray end point is a measure of the amount of copper in the soil which is soluble in the acid solution.

This value is expressed in milliliters of dithizone of certain strength. To convert to parts per million of copper, the number of milliliters of 0.001% dithizone solution used is multiplied by a factor of 2 or by a factor of 4 where 0.002% dithizone is used.

Results expressed in parts per million (p.p.m.) copper are plotted on the accompanying plan (c.f. plate CJS-3).

OBJECTIVES

Geology: Geological mapping was prompted by several problems. Foremost amongst these was the question could much of the area be eliminated on the basis of surface outcrops. It was considered important to locate any limestone beds as the Craigmont orebody is known to occur in altered limy beds.

Magnetic Survey: The magnetic survey was done to locate any unusual concentrations of magnetite (or magnetic hematite). Examples in the vicinity suggested that copper mineralization could be closely associated with magnetite concentrations.

Geochemical Survey: Samples were taken to detect any anomalous concentrations of copper in the soil. This type of survey was considered to be important in helping to evaluate the drift-covered portion of the area.

GEOLOGY

Outcrops constitute less than 1% of the claim area with the exception of the southwest claims adjoining Indian Reserve No. 9 where outcrops cover 25% of the ground. Most of the claim area is underlain by intrusive dioritic rocks of the Guichon batholith. Nicola volcanic rocks of Triassic age occur in the southwest corner of the claims adjacent to the Indian Reserve , and small areas of Nicola rocks are also found elsewhere. Outcrops of Nicola volcanics are more plentiful to the west and south of the claim area. Minor mineralization occurs in fracture zones, occasional skarn zones and in pegmatites.

Nicola Series. Most of the Nicola group is represented by massive volcanic rocks comprising agglomerate, andesitic and basaltic flows and tuff beds. Agglomerates are well developed in the southwest portion of the area, and in some instances a slight lime content of the matrix has resulted in

local development of skarn minerals including epidote and garnet. Massive fine-grained and porphyritic andesites, generally green to greenish-black in colour are most widely distributed, occasional beds of coarse-grained andesite also occur. Occasional beds of blackish-coloured volcanics of basaltic composition contain several percent of fine-grained magnetite. Thin beds of greyish to grey-green fine-grained tuff occur in several localities. No limestone beds were located in the claim area, although several limestone beds are known to outcrop on the Promontory Hills about one-half mile south of the C.J.S. 65 claim.

Alteration in the vicinity of the granite contact has resulted in the formation of hornfels containing several percent magnetite.

Granitic Rocks. The dominant rock types are light-grey to dark-grey medium-grained dioritic rocks containing twenty to thirty percent mafic minerals and very variable amounts of quartz. Some of the intrusive rocks in the northern part of the area contain up to 20 percent quartz and are mapped separately as quartz diorite. There are frequent and almost imperceptible variations in quartz content and the hornblende-biotite ratio. Coarse-grained dark-coloured meladiorites and minor amphibolite occur in the southwest section of the area adjacent to David Creek. Several small pegmatite and aplite dykes occur in dioritic rocks in the northwest part of the area close to the Nicola contact.

Structure. Dip determinations in the Nicola series were restricted to occasional tuff beds. The strike varies from N 10° E to N 25° E along the southwest edge of the map area. Dips are from 25 to 48 degrees to the east. Some data from the surrounding area suggest that the regional strike is about N 45° E. It is postulated that David Creek roughly coincides with a N 45° E trending synclinal structure. The volcanic rocks within the core of this syncline are altered to meladiorites and amphibolites.

Several narrow shear zones trending from N 5° W to N 65° W were noted. Three main sets of fractures occur in the dioritic rocks with strikes as follows: N 10° W, N 55° W, and N 55° E. Many of the pegmatite and aplite dykes follow the N 10° W set.

Contact breccias of Nicola volcanics cemented by dioritic material occur in the northwestern part of the claims. There are all gradations from fractured volcanics with occasional diorite dykelets to diorite containing separate angular to sub-angular fragments of volcanics up to several feet in diameter. Locally, a weak alignment of fragments may be noted.

A weak foliation in the dioritic rocks may sometimes be recognised. The strike of the foliation is commonly east-west with near vertical dips, a secondary foliation in the contact areas is generally concordant with the strike and dip of the volcanics.

Mineralization. Minor chalcopyrite mineralization is associated with shear zones, skarn and pegmatites. None of the mineralized occurrences are of any economic significance.

MAGNETIC RESULTS

The magnetic map shows a generally low relief over the dioritic rocks in the northern part of the area, and few trends can be recognized. The total magnetic intensity is somewhat higher in the contact zone on the southwestern claims and vague trends striking roughly northeast can be recognized. More definite northeast magnetic trends in the southeast corner of the map probably reflect the underlying structure of the Nicola volcanics.

Differences in magnetic intensity appear to be well explained by the amount of magnetite which occurs in the different rock types. Thus, the higher magnetic values in the southwest corner probably reflect a higher concentration of magnetite which occurs in the contact zone in both dioritic and volcanic rocks. Conversely, the tuffaceous rocks which underlie the southeastern part of the area contain little magnetite.

A local magnetic high of 5000 gammas on line 36W (south of B.L.2) coincides with an outcrop of hornfels which contains several percent of fine-grained magnetite. Dioritic rocks on line 24W also contain appreciable magnetite.

GEOCHEMICAL RESULTS

The results of the soil survey are somewhat difficult to assess. It will be noted that the majority of the soil samples are recorded as having zero p.p.m. copper, and of the samples which have positive values, only 21 samples had values in excess of 25 p.p.m. copper. Fifteen of the 21 samples occur in swampy areas where the samples contained a higher than normal amount of organic material. Many of the other positive samples which contained less than 25 p.p.m. copper also occurred in swampy ground. However, there does seem to be a preponderance of higher values in the northern part of the area, although there is no particular grouping of positive samples.

Detail follow-up in several areas showed that high values tend to be grouped around the edges of swampy ground. It is concluded that the small values obtained reflect low-grade mineralization similar to that noted in several outcrops.

CONCLUSIONS

No mineralization of economic interest was observed in outcrops, which cover less than 3 percent of the claim area. Geological data show that it is highly improbable that limy beds favourable for mineralization extend into the drift covered areas of the claims.

In the soil survey, high copper values are mostly associated with a high organic content of soils in swampy areas. Scattered low positive values indicate a copper content in the overburden which may be little more than normal.

No significant magnetite concentrations were located by the magnetometer. Anomalies found are relatively small and may be explained by magnetite contents of a few percent in normal rocks.

Charles S. Ney P. Eng.

November 3rd, 1958 C. S. Ney

TABLE OF COSTS

GROUP	GEOCHEMISTRY						MAGNETICS	
	Picket Lines (line miles)	Cost @$60/ line mile	No. of samples	Sample Collect. Cost	Lab Cost @ 75¢/ sample	Total Cost	Line Miles	Cost @ $30/ line mile
1	3.0	$180.00	189	$ 68.00	$141.75	$389.75	0.9	$ 27.00
2	5.1	306.00	352	127.00	264.00	697.00	4.8	144.00
3	2.9	174.00	180	65.00	135.00	374.00	2.9	87.00
4	3.1	186.00	164	59.00	123.00	368.00	1.9	57.00
5	2.5	150.00	134	48.00	100.50	298.50	2.5	75.00
6	2.9	174.00	181	65.00	135.75	374.75	2.9	87.00
7	2.0	120.00	104	38.00	78.00	236.00	2.0	60.00

Gordon Creek

Poison Creek

David Creek

N

W E

Gp. CJS 1

Gp. CJS 2

Gp. CJS 3

Gp. CJS 5

Gp. CJS 6 +9

Gp. CJS 7

#1 Fr.

IR Nº 9

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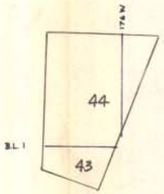
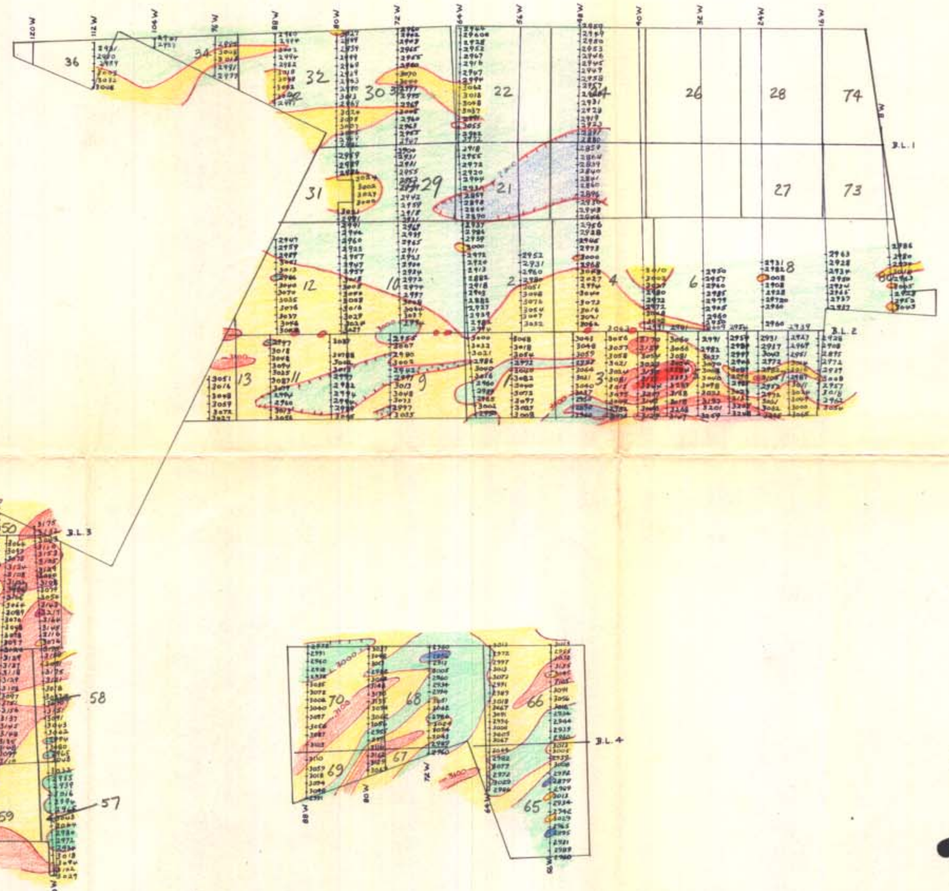
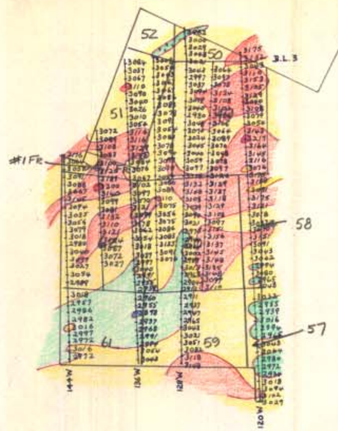
NORTHWESTERN EXPLORATIONS LIMITED		
C.J.S. GROUP, NICOLA M.D.		
CLAIM PLAN		
(Tape and Compass Survey)		
DATE: Oct. 25, 1956	DRAWN BY: R.E.H.	PLATE NO. C.J.S. - 1
REVISED BY	DATE	SCALE: 1" = 1000'

Charles Guy, P.Eng.







LEGEND

Gammas

- More than 3300
- 3200 - 3300
- 3100 - 3200
- 3000 - 3100
- 2900 - 3000
- 2800 - 2900
- Less than 2800

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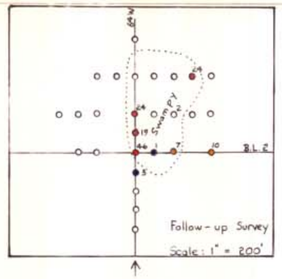
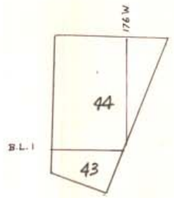
ASSESSMENT NO. 232

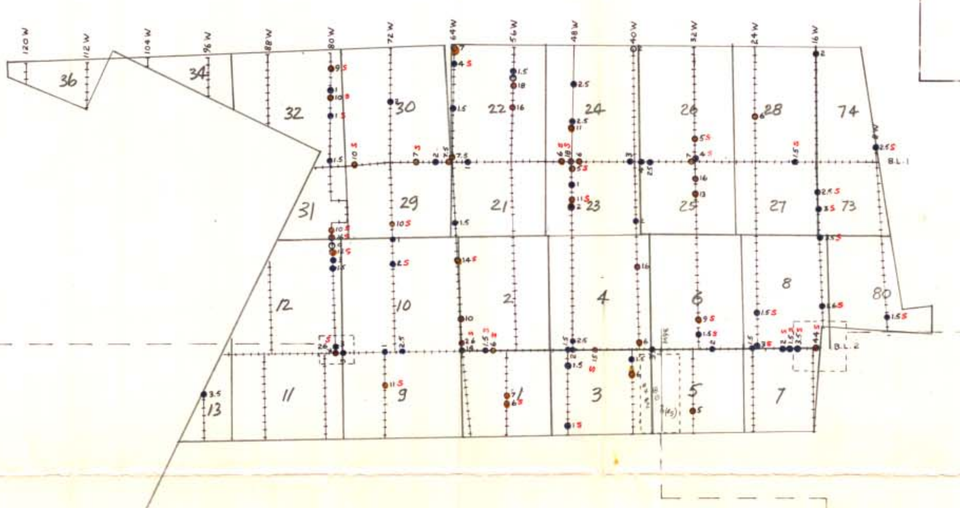
Note: These figures are one-tenth of actual values.

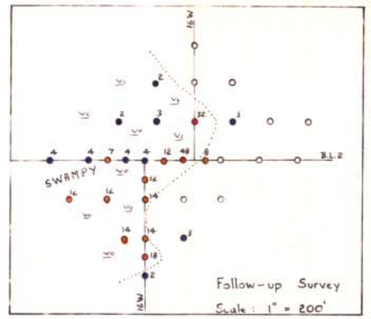
NORTHWESTERN EXPLORATIONS LIMITED		
C.J.S. GROUP, NICOLA M.D.		
MAGNETIC SURVEY		
DATE: Oct. 25, 1958	DRAWN BY: R. R.	PLATE NO. C.J.S.-2
REVISED BY: C.S.N.	DATE: Nov. 5, 58	SCALE: 1" = 1000' Cont. Int. = 100γ

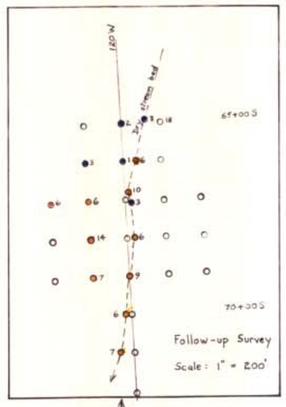
Charles A. Livy, P. Eng.

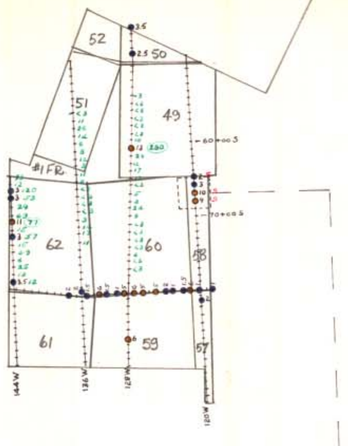


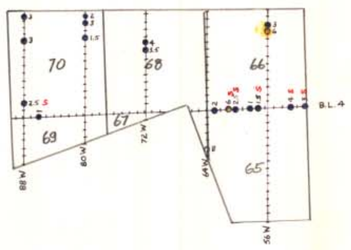


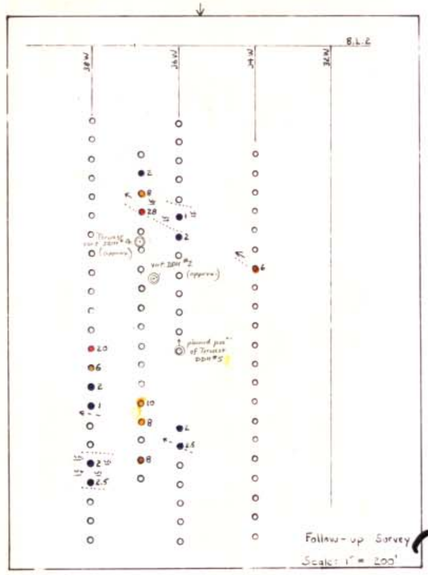












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Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 232 MAP #3

LEGEND

- Sample site (zero ppm copper)
- 013 Sample site (value 13 ppm copper)
- S Designates swamp sample
- 01 - 4 ppm copper
- 5 -14 ppm copper
- 15 -24 ppm copper
- More than 25 ppm copper

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NORTHWESTERN EXPLORATIONS LIMITED

C.J.S. GROUP, NICOLA M.D.

SOIL SURVEY

(Holman Copper Method)

DATE: Oct 25, 1958	DRAWN BY: P.E.H.	PLATE NO. C.J.S. - 3
REVISED BY	DATE	SCALE: 1" = 1000'

Gordon Ck

Poison Ck

David Ck

N

W E

44

43

36 34 32 30 22 24 26 28 74

31 29 21 23 25 27 73

12 10 2 4 6 8 80

11 9 1 3 5 7

52 50 51 49 No 1 FR 60 58 62 61 59 57

70 68 66 69 67 65

LEGEND

- Strike and dip of beds.
- Strike and dip of foliation.
- Strike and dip of joint.
- Fault, showing dip.
- Strike and dip of schistosity.
- Outcrop boundary
- Definite contact
- Approximate contact.
- Inferred contact.

NICOLA GROUP

- Cu copper occurrence.
- Sk Skarn
- Pegmatite
- 6 Mainly andesitic agglomerate, andesites, minor basaltic flows; locally hornfelsed
- 5 Tuffaceous beds
- 4 Breccia of above cemented by diorite
- 3 Dioritic rocks, mainly medium-grained
- 2 Quartz diorite, mainly medium-grained
- 1 Metadiorite and minor amphibolite, generally coarse-grained

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NO. 232 MAP #4

Map 5 is practically identical to 4 and was omitted

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C.J.S. GROUP, NICOLA M.D.

SURFACE GEOLOGY

DATE: Oct 25 1958	DRAWN BY: P.E.H	PLATE NO. C.J.S.-4
REVISED BY	DATE	SCALE: 1" = 1000'

Charles S. Ney P.Eng.

N

W E

not filmed (duplicate)

LEGEND

- 25 Strike and dip of beds.
- 80 Strike and dip of foliation.
- 60 Strike and dip of joint.
- 80 Fault, showing dip.
- 40 Strike and dip of schistosity.
- Outcrop boundary.
- Definite contact.
- Approximate contact.
- Inferred contact.

NICOLA GROUP

- Cu copper occurrence.
- SK Skarn.
- Pegmatite
- Mainly andesitic agglomerate, andesites, minor basaltic flows; locally hornfelsed.
- Tuffaceous beds.
- Breccia of above cemented by diorite.
- Dioritic rocks, mainly medium-grained.
- Quartz diorite, mainly medium-grained.
- Metadiorite and minor amphibolite, generally coarse-grained.

NORTHWESTERN EXPLORATIONS LIMITED

C.J.S. GROUP, NICOLA M.D.

SURFACE GEOLOGY

DATE: Oct 25, 1958	DRAWN BY: P.E.H	PLATE NO. C.J.S.-4
REVISED BY	DATE	SCALE: 1" = 1000'

Thanks & buy P.E.H.