

83-#205-#11289

COMMONWEALTH MINERALS LIMITED

GEOPHYSICAL REPORT

ON THE

BOGG MINERAL CLAIMS

KAMLOOPS MINING DIVISION

A REPORT ON GEOPHYSICS SURVEY

NTS: 92P/9W, 10E

May 1983

L. DANDY. B.Sc.  
A. Troup, P.Eng.

<u>CLAIM</u>	<u>UNITS</u>	<u>RECORD NO.</u>	<u>ANNIVERSARY</u>
BOGG 1	16	4016	May 5
BOGG 2	18	4017	May 5
BOGG 3	20	4018	May 5
BOGG 4	16	4019	May 5
BOGG 5	8	4020	May 5
BOGG 6	8	4021	May 5

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

11,289

Location: 51°<sup>37</sup>135'N, 120°30'W

Owners: G.H. Rayner and Associates Ltd., W. Vancouver, B.C. and  
Commonwealth Minerals Limited, Vancouver, B.C.

Operator: Commonwealth Minerals Limited, Vancouver, B.C.

Consultant: A.G. Troup, Archean Engineering Limited, Vancouver, B.C.

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GEOPHYSICAL REPORT  
ON THE  
BOGG CLAIMS  
KAMLOOPS MINING DIVISION  
NTS 92P/9W,10E

SUMMARY

The BOGG property is a copper, molybdenum and silver prospect located in the Kamloops Mining Division approximately 30 kilometres northwest of Little Fort.

Reconnaissance VLF-EM surveys using Stations 'NAA' and 'NLK' were carried out over the BOGG 4 claim since previous work indicated potential for Cu and Ag mineralization in this location. The VLF-EM survey using Station 'NLK' showed many conductors running sub-parallel to known fault trends and geological contacts.

A reconnaissance VLF-EM survey over the entire BOGG property, with follow-up intermediate survey lines in areas of strong conductors is recommended.

## 1. INTRODUCTION

The BOGG property is a Cu-Mo-Pb-Zn-Ag prospect located approximately 100 kilometres north of Kamloops in south-central British Columbia. In 1983 an orientation VLF-EM Survey was carried out over the property. The purpose of this survey was to attempt to locate high grade veins within an area of known low grade mineralization.

The survey was carried out in April 1983 by a two person crew working from a camp on the property. Field work was supervised by Mark Management's Geologist L. Dandy under the direction of consulting geologist A.G. Troup of Archean Engineering Ltd.

### 1.1 Location and Access

The BOGG property is located approximately 30 kilometres northwest of Little Fort in the Kamloops Mining Division. The claims are situated on topographic map sheets 92P/9W and 92P/10E and are centred on latitude  $51^{\circ}35'$  and longitude  $120^{\circ}30'$ .

In summer access to the property is provided by a poorly maintained road that joins Highway 24 some 25 kilometres west of Little Fort. The property is located 12 kilometres northwest of this junction. Local access is provided by several exploration roads and cat trails that cross the property.

In winter the property is accessible only by helicopter or skidoo. A Bell 206B helicopter operated by Okanagan Helicopters from their year round base in Kamloops was used during the present programme.

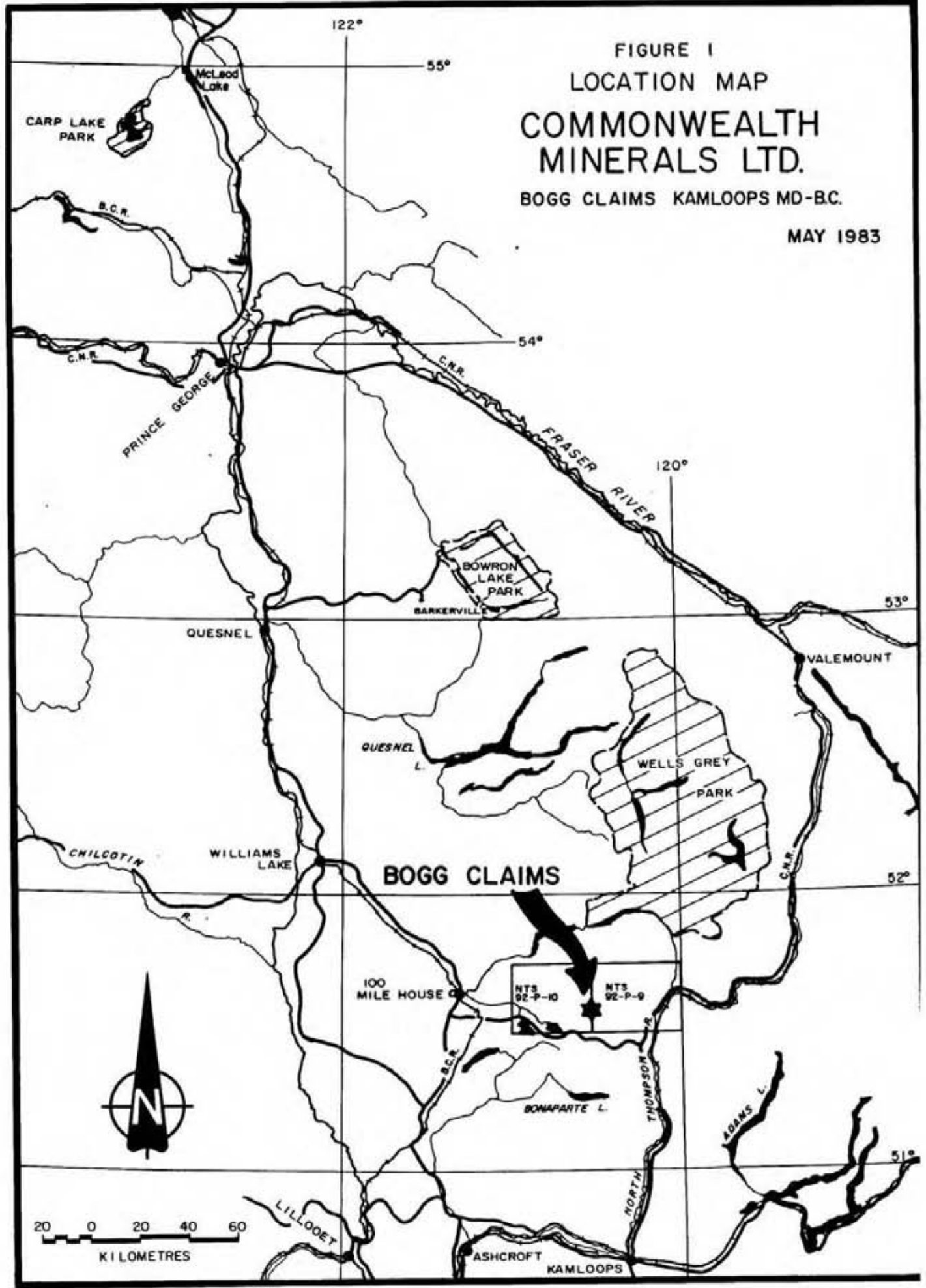
### 1.2 Physiography

The property is situated in an area of low rolling hills with elevations ranging from 4,500 feet to 5,400 feet. The property is moderate to densely forested with spruce, balsam and pine.

FIGURE 1  
LOCATION MAP  
COMMONWEALTH  
MINERALS LTD.

BOGG CLAIMS KAMLOOPS MD-BC.

MAY 1983



### 1.3 History

The earliest recorded work on the property was done by Anaconda American Brass Limited between 1965 and 1970. Anaconda carried out regional geochemistry, geological mapping and induced polarization surveys and followed up with trenching and drilling. Anaconda allowed the claims to lapse in 1921 when their Canadian operations were suspended.

The area was subsequently staked by G. Rayner and optioned by Prism Resources Limited until 1973. Prism carried out a geological survey but no follow-up work was done.

In 1973 the property was optioned by Cities Services Mineral Corporation. Cities Services carried out additional geochemical sampling, an induced polarization survey, a magnetic survey, trenching and drilling. The property reverted to G. Rayner in 1975 when Cities Services suspended their mineral exploration activities.

In 1978 the property was optioned by Commonwealth Minerals Ltd.

### 1.4 Claim Information

This property is located in the Kamloops Mining Division and consists of six modified grid claims comprised of 86 units. Current claim status is shown in Table 1.

TABLE 1  
Claim Status

<u>Claim</u>	<u>Units</u>	<u>Record No.</u>	<u>Expiry Date</u>
BOGG 1	16	4016	May 5, 1984
BOGG 2	18	4017	May 5, 1984
BOGG 3	20	4018	May 5, 1984
BOGG 4	16	4019	May 5, 1985
BOGG 5	8	4020	May 5, 1984
BOGG 6	8	4021	May 5, 1984

### 1.5 Work Done by Commonwealth Minerals Ltd. in 1983

The following field work was completed on the BOGG claims by Commonwealth Minerals Ltd. during the period April 16-26, 1983.

- 1) A VLF-EM survey over BOGG 4 using station 'NAA' with lines oriented southwest-northeast.
- 2) A VLF-EM survey over BOGG 4 using station 'NLK' with lines oriented northwest-southeast.



## 2. GEOLOGY

### 2.1 General Geology

This area was mapped in 1971 by R.B. Campbell and H.W. Tipper of the Geological Survey of Canada and published in Memoir 363 (Figure 3). Detailed mapping of the area was carried out by V. Preto of the B.C. Department of Mines in 1970 (Figure 4). J. Orr mapped the claim area in 1971, A. Sinclair in 1972 for Prism Resources Ltd., and N. Jorgensen for Cities Services Mineral Corporation in 1975.

Nine rock units have been recognized on the property: Tuff, agglomerate, feldspar porphyritic andesite, pyroxene breccia, intrusive breccia, skarn, monzonite, syenite and pyroxenite (Table 2).

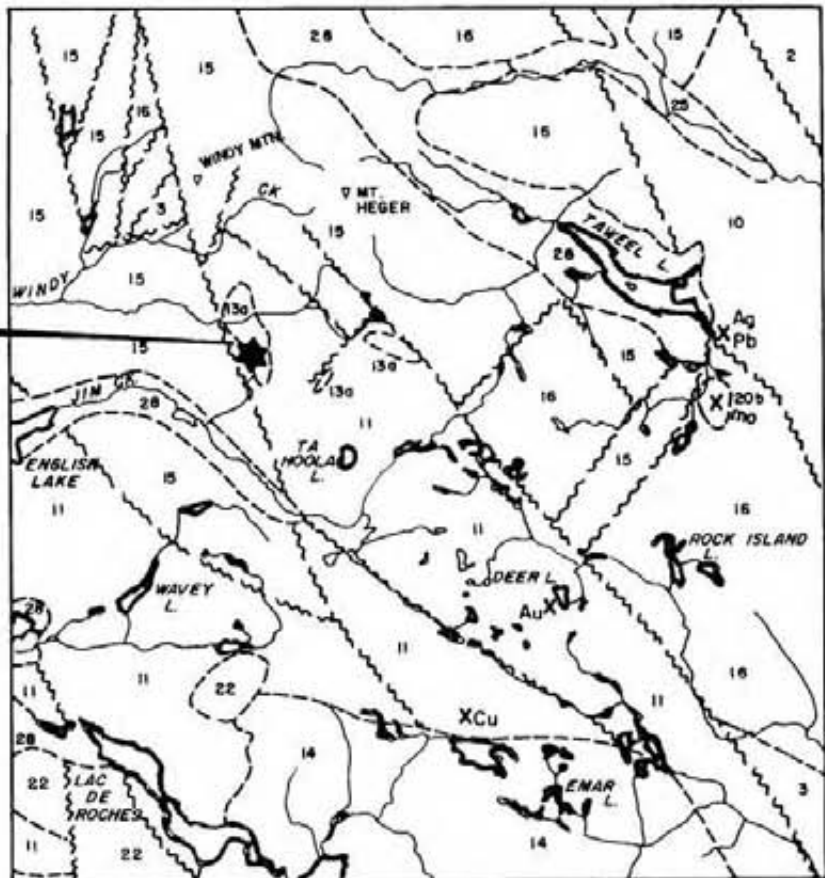
The oldest units on the property are the Upper Triassic Nicola Group consisting of tuff, andesite and agglomerate. Tuff is the most abundant rock type in the area. It is commonly green and ranges from a fine-grained laminated rock to a medium-grained fragmental rock. Feldspar porphyritic andesite is a black to green plagioclase porphyry with moderate chlorite alteration. Agglomerate is composed of tuff and andesite fragments in a tuffaceous matrix.

Monzonite and syenite later intruded the Nicola Group volcanics causing brecciation and locally allowing the formation of a quartz stockwork. The Monzonite is a grey to white, fine-grained intrusive with minor potassium feldspar and hornblende. It occurs throughout the property as dykes and small intrusive masses. The syenite is a pink to white potassium feldspar porphyritic rock with variable quartz content. It occurs as dykes and large intrusive masses. Syenite is of intermediate age between the Nicola volcanics and the monzonite.

A white and purple, fine-grained, heavily silicified skarn unit occurs sporadically throughout the property. It has a relic agglomerate texture and is cut by abundant quartz veinlets. The formation of the skarn is contemporaneous with the syenite and monzonite intrusions.



BOGG CLAIMS



**LEGEND:**

**PLEISTOCENE AND RECENT**

28 Till, gravel, clay, silt, alluvium (few if any bedrock exposures)

**TERTIARY**

**MIOCENE AND/OR PLEISTOCENE**

25 Plateau lava, olivine basalt, basalt andesite, related ash and breccia beds, basaltic andesite, 25a, olivine gabbro plugs

**Eocene and (?) Oligocene  
KAMLOOPS GROUP (21, 22)**

22 SKULL HILL FORMATION: dacite, trachyte, basalt, andesite, rhyolite, related breccias

**Eocene**

21 CHU CHUA FORMATION: conglomerate, sandy shale, arkose, coal

**JURASSIC**

**SINEMURIAN TO (?) MIDDLE JURASSIC**

16 Porphyritic augite andesite breccia and conglomerate; minor andesite andesite, tuff, argillite, and flows (may include some 11; 16a, isolated areas of hornblende andesite (may be all or partly intrusive)

15 Andesitic andesite, siltstone, grit, breccia and tuff, local granite bearing conglomerate, greywacke; minor argillite and flows (may include some 11)

**TRIASSIC OR JURASSIC**

**RHAETIAN OR HETTANGIAN**

14 THUYA AND TAKOMKANE BATHOLITHS AND SIMILAR GRANITIC ROCKS, hornblende-biotite quartz diorite and granodiorite, minor hornblende diorite, monzonite, gabbro, hornblende, 14a, diorite and syenodiorite, 14b, leuco-quartz monzonite and granodiorite

13 13a, fine- to medium-grained: pink to brown and grey syenite and monzonite, 13b, medium-grained, creamy-buff, locally coarsely porphyritic (K-feldspar) syenite and monzonite

**TRIASSIC**

**KARNIAN AND NORIAN  
NICOLA GROUP**

11 Augite andesite flows and breccia, tuff, argillite, greywacke, grey limestone; 11a, includes minor 3 and 10

10 Black shale, argillite, phyllite, siltstone, black limestone

**PENNSYLVANIAN AND PERMIAN  
MORROWAN TO GUADALUPIAN**

3 Volcanic andesite, greenstone, argillite, phyllite; minor quartz-mica schist, limestone, basaltic and andesitic flows, amphibolite, conglomerate and breccia; includes small bodies of 16a

**MINERALS**

Copper ..... Cu  
Gold ..... Au  
Lead ..... Pb  
Zinc ..... Zn  
Molybdenite ..... mo  
Silver ..... Ag

**COMMONWEALTH MINERALS LTD.**  
**BOGG CLAIMS KAMLOOPS M.D. - B.C.**  
**NTS 92-P-9, 10**

**REGIONAL GEOLOGY MAP**

SCALE 1:250 000

MAY 11, 1983

After CAMPBELL & TIPPER 1971

FIGURE 3

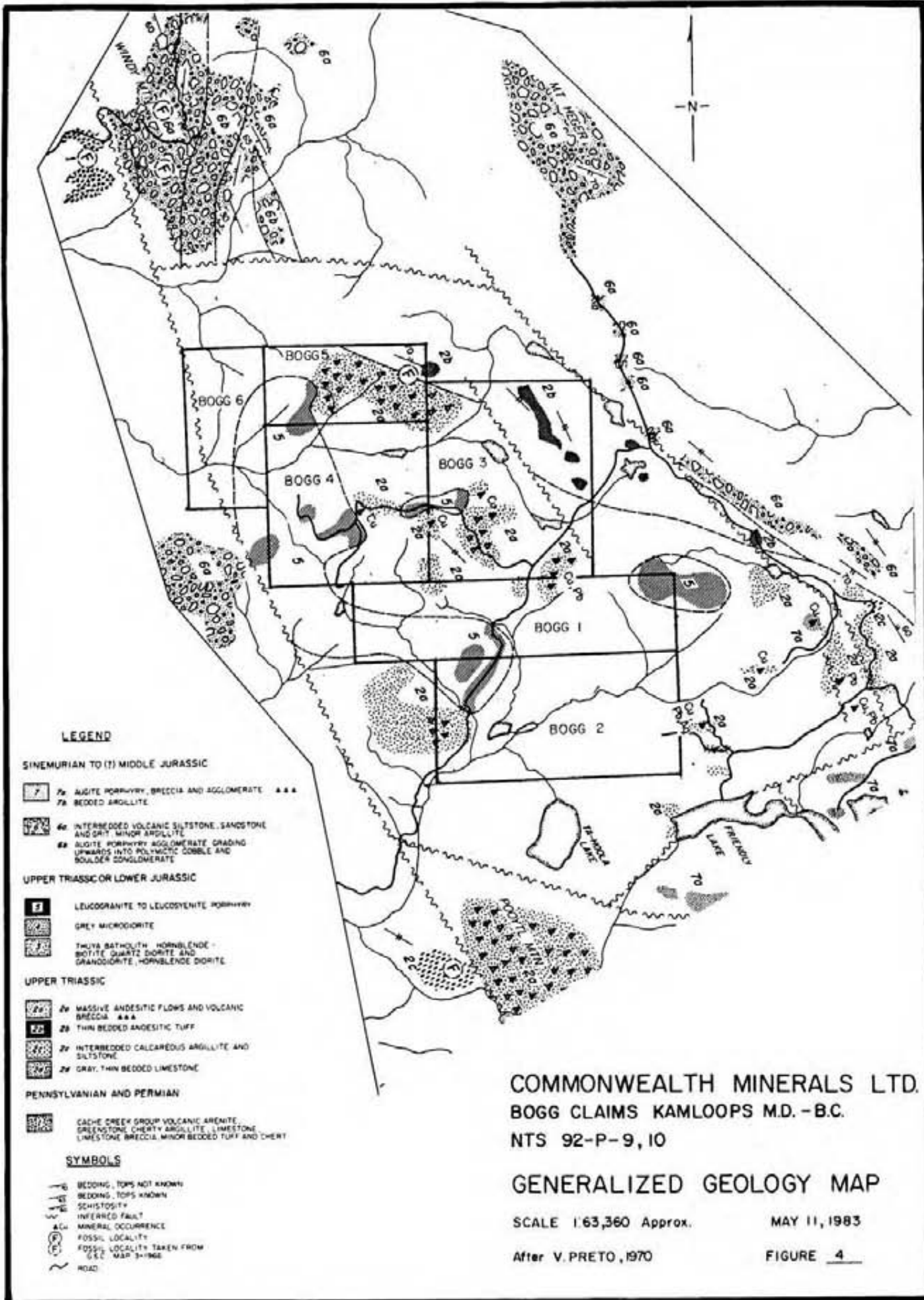


TABLE 2

## ROCK UNITS AND SEQUENCE OF EVENTS

## YOUNGEST

Quartz-carbonate veins

Pyroxenite, pyroxene breccia, pyroxene veins, 0131	probably Upper Triassic to Lower Jurassic
---	--

Intrusive breccia	probably Upper Triassic to Lower Jurassic
-------------------	--

Monzonite } Syenite }	skarn, quartz veins	probably Upper Triassic to Lower Jurassic
--------------------------	---------------------	--

Andesite, tuff, agglomerate (Nicola Group)	Upper Triassic
---	----------------

## OLDEST

An intrusive breccia is found in the north-west corner of the property. It is composed of fragments of monzonite and Nicola volcanics in a feldspar porphyry. The presence of monzonite fragments indicates that this is a younger intrusive event unrelated to the monzonite and syenite intrusions.

A sub-unit of the Nicola Group is a pyroxene breccia comprised of fragments of tuff and agglomerate in a pyroxene and calcite matrix. The pyroxene breccia matrix is compositionally similar to a pyroxenite found in veins and dykes and is thought to be of the same intrusive event. The dykes and veins are composed of fine-to coarse-grained pyroxene with interstitial calcite and potassium feldspar. The pyroxene is considered to be the youngest rock unit on the property since pyroxenite dykes and veins cut all other rock units.

Secondary quartz-carbonate veins are widespread, cutting all rock units. They vary in width from 2 mm to 4 cm and are generally accompanied by wide bands of carbonatized wall rock.

Three types of alteration (k-spar flooding, carbonatization and secondary biotite) have been recognized on the property, but these alteration zones have not yet been completely mapped.

## 2.2 Mineralization

Mineralization found on the BOGG property consists of chalcopyrite, bornite, tetrahedrite, galena, magnetite and pyrite. Chalcopyrite is the most economically significant mineral present and occurs predominantly in pyroxene veins and in quartz-carbonate veins. Bornite occasionally occurs with the chalcopyrite. Galena is present in minor amounts throughout the area and is associated with calcite-bearing pyroxene veins. Pyrite and magnetite are disseminated throughout the volcanics.

The EM-16 surveys were conducted over areas which had previously been lithochemically sampled and showed anomalous copper and silver values.

### 2.3 Rock Sample Assay Results

Sample LD-1 was assayed for Ag, Au, Cu and Mo. It was taken from a chalcopyrite-and bornite-bearing carbonate vein cutting a fine-grained silicified andesite. The location of this sample corresponds with previously determined anomalous Ag and Cu zones.

Only a single outcrop was encountered while completing this survey due to a heavy snow cover. This outcrop consisted of a fine-grained silicified andesite cut by a chalcopyrite-and bornite-bearing quartz-carbonate vein. The vein was sampled since its location corresponded with previously determined anomalous Ag and Cu zones.

The assay results of rock sample LD-1 showed 0.11% Cu, 0.001% Mo, 0.04 oz/t Ag, and less than 0.003 oz/t Au.



### 3. GEOPHYSICS

#### 3.1 Instrument and Survey Techniques

Two reconnaissance VLF-EM surveys were conducted over the BOGG 4 claim using a Geonics EM-16 instrument. 18.3 line kilometres were surveyed with readings taken at 25-metre intervals along the lines. Southwest to northeast lines were run using the submarine transmitting station in Maine, U.S.A. (Station 'NAA', 17.8 kHz) and in-phase and quadrature readings were taken at 355° to ensure that south and east dips were indicated as negative readings by the instrument. Over the same area, lines were run from northwest to southeast using the submarine transmitting station in Seattle, U.S.A. (Station 'NLK', 24.6 kHz). In-phase and quadrature readings were taken in a northwesterly direction (292°) to ensure that south and east dips were indicated as negative readings by the instrument. The in-phase readings were later reduced by use of the Fraser Filtering Technique (Fraser, 1969) and contoured.

#### 3.2 Presentation and Discussion of Results

Survey results on the southwest-to northeast-trending lines (Station 'NAA', 17.8 kHz, Figures 6 and 7) show several parallel conductors trending approximately 120°. The strongest conductor has a maximum Fraser Filtered value of +46 and a strike length of greater than 600 metres. A number of other conductors have comparable strike lengths.

Results on the northwest-to southeast-trending lines (Station 'NLK', 24.6 kHz, Figures 8 and 9) show many sub-parallel conductors trending 350° to 040°. The strongest conductor has a maximum Fraser Filtered value of +73 and a strike length of greater than 400 metres. Several other conductors exceed this strike length, the longest being 1300 metres. These conductors correspond to several north-south-trending faults and geological contacts.

#### 4. CONCLUSIONS AND RECOMMENDATIONS

The work completed in April 1983 on the BOGG claims may be summarized as follows:

- 1) The VLF-EM survey results using Station 'NAA' show parallel conductors on BOGG 4 trending approximately 120°.
- 2) The VLF-EM survey results using Station 'NLK' show sub-parallel conductors on BOGG 4 trending between 350° and 040° which corresponding to north-south trending faults and geological contacts.

Additional reconnaissance VLF-EM surveys over the rest of the BOGG claims: using station 'NLK' and follow-up VLF-EM surveys with intermediate survey lines over anomalous zones and strong conductors are recommended.

Respectfully submitted,  
Commonwealth Minerals Limited

*Linda Lavery*  
L. Dandy, B.Sc.

*A. Troup*



A circular seal for a Professional Engineer in the Province of British Columbia. The seal contains the text: "PROFESSIONAL ENGINEER", "PROVINCE OF BRITISH COLUMBIA", and "A. G. TROUP".

A. Troup, P.Eng.



BIBLIOGRAPHY

1. Campbell, R.B. and Tipper, H.W., 1971, Geology of Bonaparte Lake Map area, British Columbia: G.S.C. Memoir 363.
2. Fraser, D.C., 1969, Contouring of VLF-EM Data: Geophysics, V.34, No.6, p.958-967.
3. Giroux, G.H., 1979, Geochemical and Geophysical Report on the BOG, FRI and COM Claims: Engineer's Report for Commonwealth Minerals Ltd.
4. Giroux, G.H., 1980, Geochemical Report on the BOGG, FRI and COM Claims: Engineer's Report for Commonwealth Minerals Ltd.
5. Jorgensen, N., 1975, BOG Property Final Report - September, 1975: Engineer's Report for Cities Services Mineral Corp.
6. Orr, J.F., 1971, Report on BOG Property for Prism Resources Ltd.
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9. Sinclair, A.J., 1972, BOGG Project, Geological Map, August, 1972.

COSTS STATEMENT  
BOGG CLAIMS  
GEOPHYSICS SURVEY (18.3 line km.)  
APRIL 14 through 26, 1983

SALARY AND WAGES

1 person, 12 man days @ \$88.64 \$1,063.68

BENEFITS

@ 20% 212.74

FOOD AND ACCOMMODATION

2 persons, 23.5 man days @ \$16.09 378.02

FUEL

178.38

SUPPLIES

97.27

HELICOPTER (OKANAGAN)

17,25 April, 1983 3.6 hrs. @ \$385.50 1,387.80

CONTRACTED FIELD ASSISTANT

1,265.00

RENTAL EQUIPMENT

Gabriel EM-16, 14-26 April, 13 days @ \$27.00	\$351.00	
Gallant EM-16, 14-26 April, 13 days @ \$27.00	351.00	
Gabriel Camp Equipment 25.5 man days @ \$6.00	153.00	
Mark Management 4WD Blazer		
14-26 April, 13 days @ \$43	559.00	
1450 km @ \$0.16	232.00	
	1,646.00	1,646.00

CONSULTANT'S FEES

Archean Engineering 750.00

REPORT PREPARATION

3,318.18

Total \$10,297.07

=====

COSTS APPORTIONED  
TO CLAIMS

<u>CLAIM</u>	<u>RECORD NO.</u>	<u>UNITS</u>	<u>LINE KM.</u>	<u>COSTS</u>	<u>WORK APPLIED</u>	<u>YEARS</u>	<u>EXPIRY DATE</u>
BOGG 1	4016	16	-	-	\$ 1,600	1	1984
BOGG 2	4017	18	-	-	1,800	1	1984
BOGG 3	4018	20	-	-	2,000	1	1984
BOGG 4	4019	16	18.275	\$10,297.07	3,200	2	1985
BOGG 5	4020	8	-	-	800	1	1984
BOGG 6	4021	<u>8</u>	-	<u>-</u>	<u>800</u>	1	1984
		86		\$10,297.07	\$10,200		

STATEMENT OF QUALIFICATIONSA. TROUP, P.ENG.ACADEMIC

1967	B.Sc. Geology	McMaster University, Ontario
1969	M.Sc. Geochemistry	McMaster University, Ontario

PRACTICAL

1981 -	3605 Creery Ave. West Vancouver, B.C.	Consulting Geologist with Archean Engineering Ltd.
1977 - 1980	Geological Survey of Malaysia	Project Manager on a CIDA supported mineral explora- tion survey over peninsular Malaysia.
1969 - 1977	Rio Tinto Canadian Exploration Ltd. Vancouver, B.C.	Geologist involved in all aspects of mineral explora- tion in B.C., the Yukon and N.W.T.
1968	McMaster University Dept. of Geology Hamilton, Ontario	M.Sc. thesis work. Reconnaissance mapping and geochemical study, Lake Shubenicadia area, Nova Scotia.
1967 (summer)	Canex Aerial Exploration Ltd. Toronto, Ontario	Geologist in charge of detailed mapping and reconnaissance geochemical program in Gaspé, Quebec
1966 (summer)	McMaster University Dept. of Geology Hamilton, Ontario	Detailed and reconnaissance mapping in Northern Ontario.
1965 (summer)	International Nickel Co. of Canada Thompson, Manitoba	Detailed mapping in the Thompson area, Manitoba.
1964 (summer)	Geological Survey of Canada Ottawa, Ontario	Regional geochemical survey in the Keno Hill area, Yukon.





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TELEX: 043-52597

• ANALYTICAL CHEMISTS

• GEOCHEMISTS

• REGISTERED ASSAYERS

## CERTIFICATE OF ASSAY

TO : COMMONWEALTH MINERALS  
C/O MARK MANAGEMENT  
1500 - 675 WEST HASTINGS STREET  
VANCOUVER, B.C.  
V6B 1N2

CERT. # : A8311153-001-1  
INVOICE # : I8311153  
DATE : 13-MAY-83  
P.O. # : NONE

LINDA DANDY C/O MARK MANAGEMENT

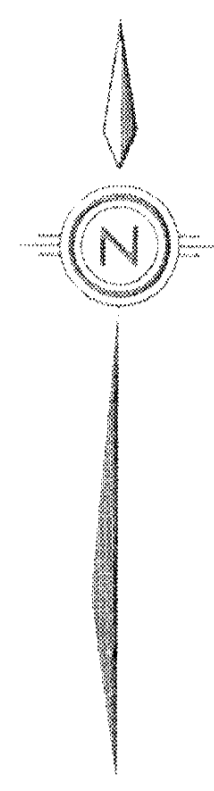
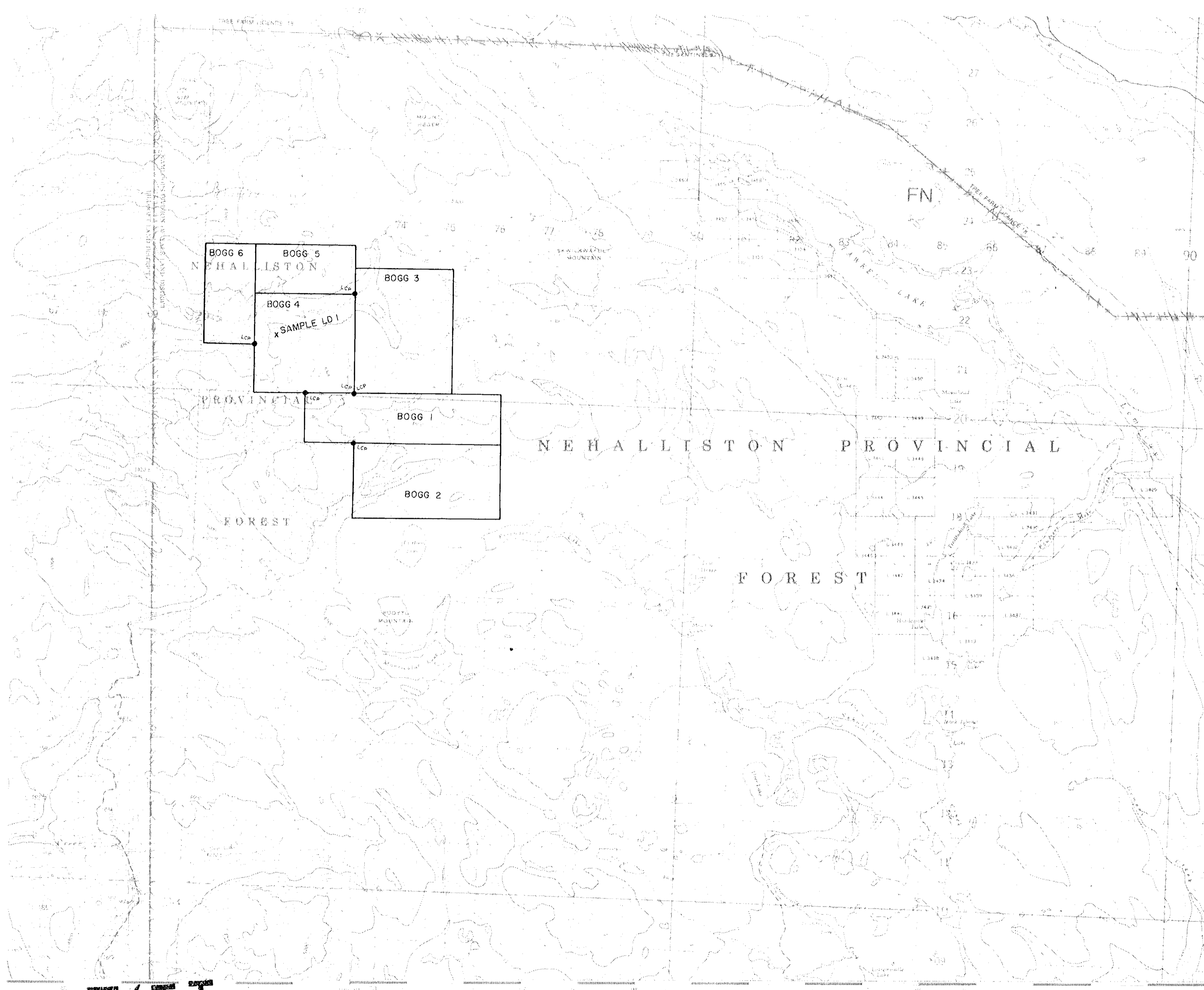
Sample description	Prep code	Cu %	Mo %	Ag FA oz/T	Au FA oz/T		
LD-1	207	0.11	0.001	0.04	<0.003	--	--



.....  
Registered Assayer, Province of British Columbia





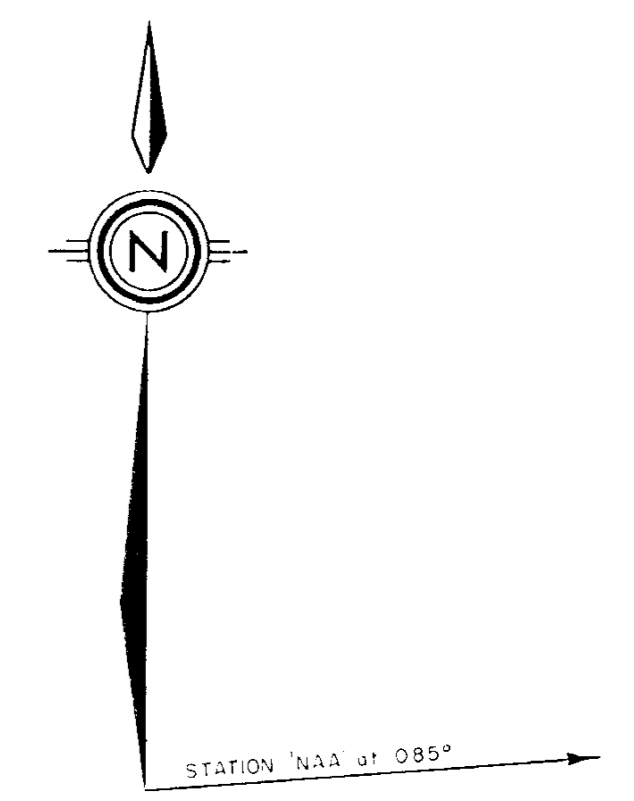
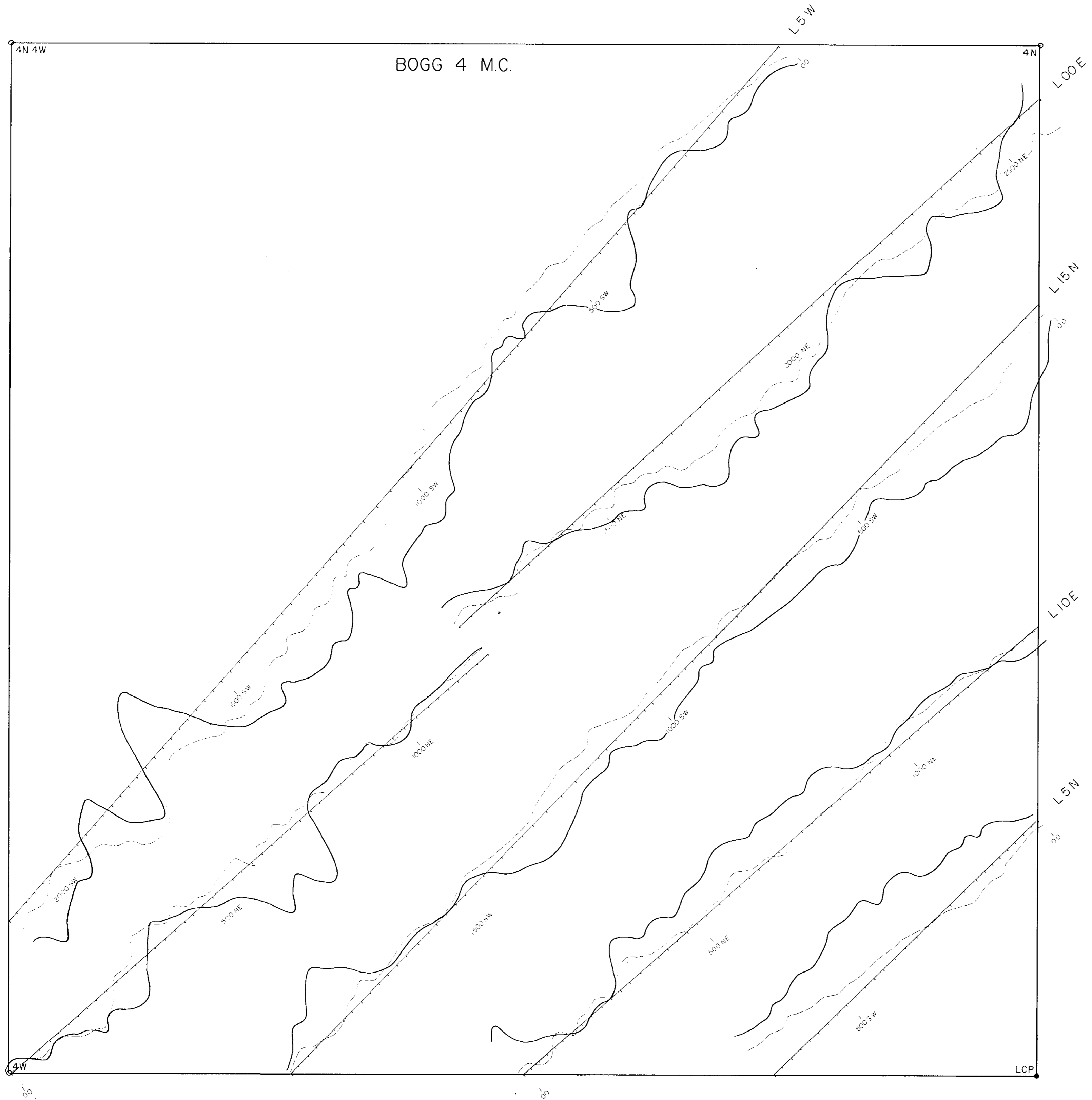


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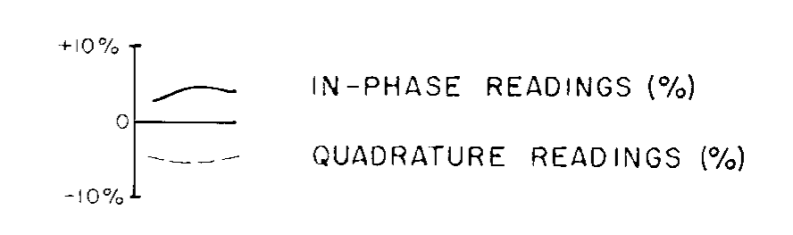
GEOLOGICAL BRANCH  
ASSESSMENT REPORT

COMMONWEALTH MINERALS LTD.	
BOGG CLAIMS	
KAMLOOPS MINING DIVISION, B.C.	
SAMPLE LOCATION MAP	
1:50 000	
NTS 92-P-9,10	LD/rwr
DATE MAY 11, 1983	FIGURE 5





**LEGEND:**



INSTRUMENT: GEONICS EM-16

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,289**

COMMONWEALTH MINERALS LTD.	
BOGG CLAIMS	
KAMLOOPS MINING DIVISION, B.C.	
VLF-EM SURVEY	
STATION "NAA"	
IN-PHASE & QUADRATURE PROFILES (%)	
1:5 000	
NTS 92-P-9,10	LD/rwr
DATE: MAY 11, 1983	FIGURE 6

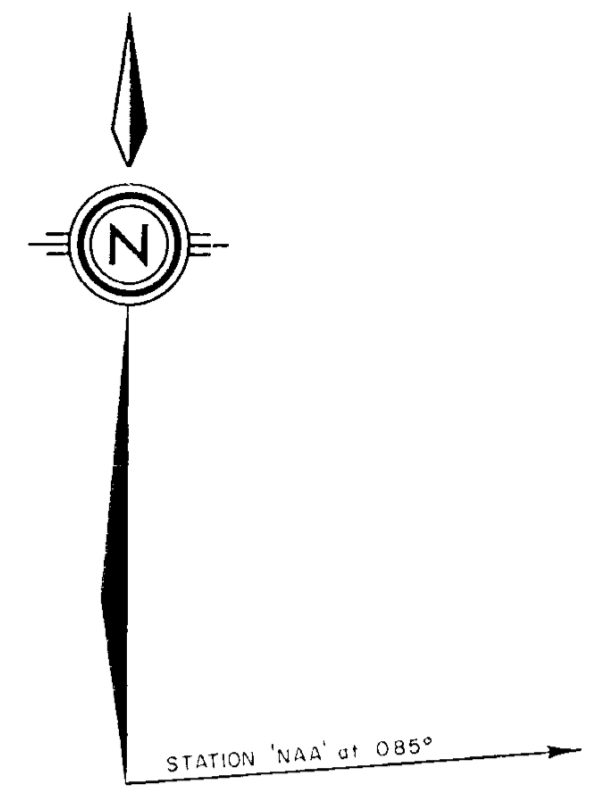
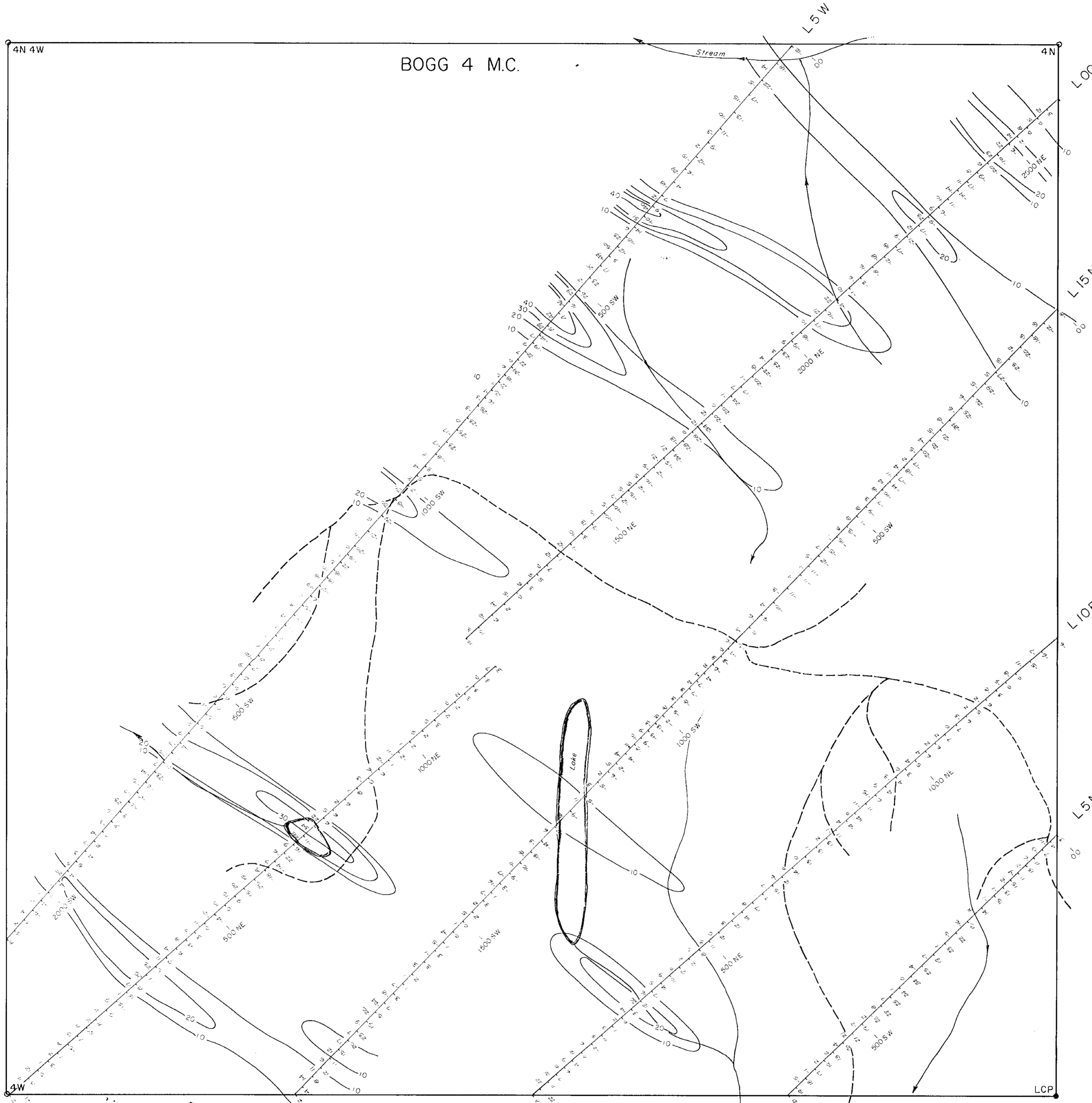
4N 4W

BOGG 4 M.C.

4N

4W

LCP



**LEGEND:**

- FRASER FILTER RESULTS %
- IN-PHASE READINGS %
- CONTOUR INTERVAL = 10%

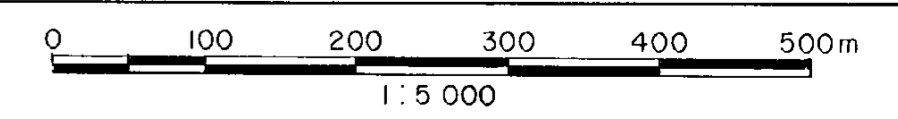
INSTRUMENT: GEONICS EM-16

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,289**

COMMONWEALTH MINERALS LTD.  
BOGG CLAIMS  
KAM LOOPS MINING DIVISION, B.C.

VLF-EM SURVEY  
STATION "NAA"  
CONTOURS OF FRASER FILTER RESULTS (%)



NTS 92-P-9,10  
DATE: MAY 11, 1983 LD/rwr FIGURE 7



