

GEOCHEMICAL REPORT

- on the -

CROWN PROPERTY

Kamloops Mining Division, British Columbia  
N.T.S. 82M/12W

- for -

UNION OIL COMPANY OF CANADA LTD.,  
335 - 8th Avenue, S.W.,  
Calgary, Alberta T2P 2K6

Prepared by;

G. Belik and Associates Ltd.,  
664 Sunvalley Drive,  
Kamloops, B. C. V2B 6S4

Gary D. Belik, M.Sc.  
September 19, 1983

GOLD COMMISSIONER

SEP 22 1983

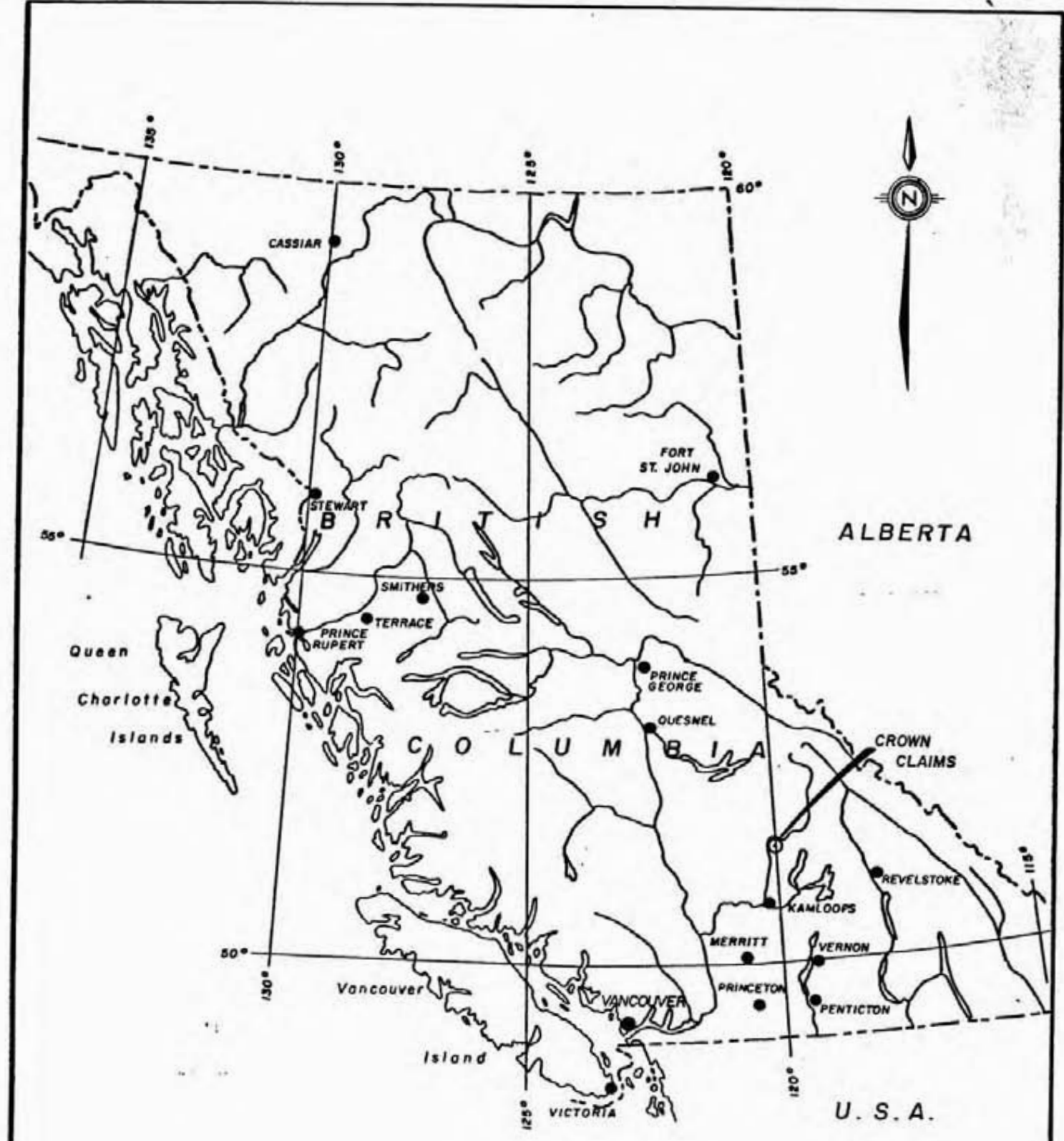
KAMLOOPS  
BRITISH COLUMBIA

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

11,462

## Table of Contents

	<u>Page No.</u>
SUMMARY . . . . .	2
INTRODUCTION . . . . .	5
CLAIMS . . . . .	5
LOCATION AND ACCESSIBILITY . . . . .	6
GENERAL GEOLOGICAL SETTING . . . . .	6
SOIL GEOCHEMISTRY . . . . .	7
Sampling Procedure. . . . .	8
Laboratory Determination Method . . . . .	9
Presentation of Results . . . . .	10
Discussion of Results . . . . .	10
"B" Horizon . . . . .	11
Auger Samples . . . . .	12
CONCLUSIONS AND RECOMMENDATIONS . . . . .	13
FIGURES:	
1024-1 - Location Map . . . . .	1
1024-2 - Claim Map . . . . .	4
1024-3 - Geochemical Plan . . . . .	Pocket
"B" Horizon Samples	
1024-4 - Geochemical Plan . . . . .	Pocket
Auger Samples	
APPENDICES:	
APPENDIX I - Assay Certificates	
APPENDIX II - Statement of Expenditures	
APPENDIX III- Statement of Qualifications:	
G. D. Belik	



UNION OIL COMPANY OF CANADA LTD.	
LOCATION MAP	
CROWN CLAIMS	
KAMLOOPS MINING DIVISION, B.C.	
Technical Work by: G. Belik and Assoc. Ltd.	Date: Aug. 1982.
Scale: 1cm. = 87km.	Dwg No. 1025-1

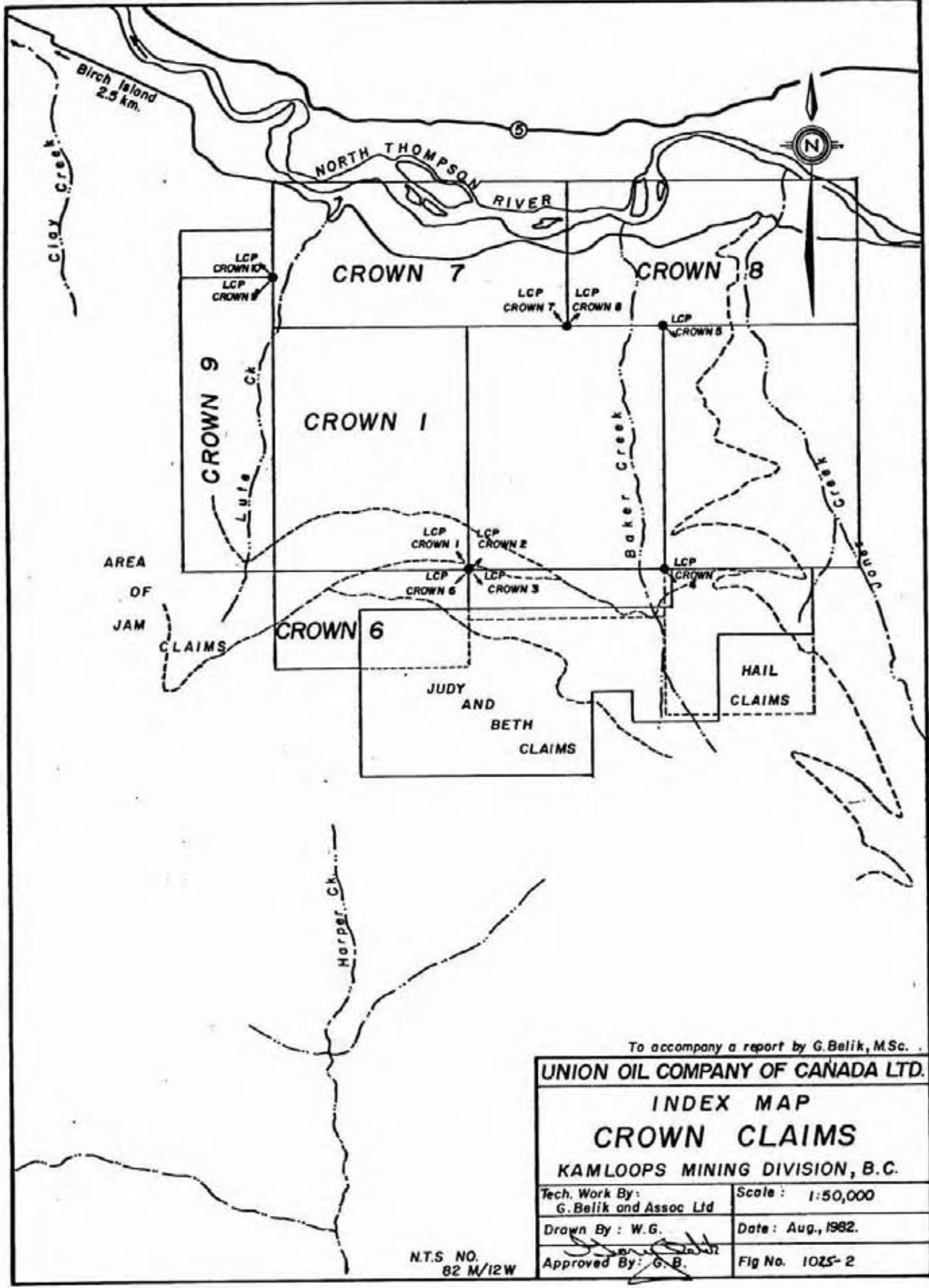
## Summary

The Crown claims are underlain by strongly deformed, felsic to intermediate volcanic rocks of the Paleozoic, Eagle Bay Formation. Along the south edge of the Crown 1 claim a coarse pyroclastic unit is partly exposed along a road cut. This unit closely resembles 'mill rock' and is composed of 80% sub-angular to well rounded, stretched 'bombs' a few cm to 40 cm in size. Most fragments, which commonly contain quartz eyes, are dacitic to rhyolitic in composition.

In 1979 and 1982 Union Oil Company of Canada Limited conducted preliminary exploration programs in order to evaluate the massive sulphide potential within and peripheral to the felsic fragmental unit. This work, which included airborne E.M./Mag, ground V.L.F.-E.M., an Induced Polarization/Resistivity survey, soil and silt geochemistry, prospecting and geological mapping defined numerous target areas.

The 1983 soil sampling program, which is the subject

of this report, refined and further evaluated areas of anomalous soil geochemistry (Cu,Pb,Zn) previously identified within the north half of the Crown 1 claim. These soil anomalies appear to be associated with bedrock conductors and/or zones of anomalous I.P. Several priority targets, which warrant trenching and/or diamond drilling, have been identified.



To accompany a report by G. Belik, M.Sc.

<b>UNION OIL COMPANY OF CANADA LTD.</b>	
<b>INDEX MAP</b>	
<b>CROWN CLAIMS</b>	
<b>KAMLOOPS MINING DIVISION, B.C.</b>	
Tech. Work By: G. Belik and Assoc Ltd	Scale: 1:50,000
Drawn By: W.G.	Date: Aug., 1982.
Approved By: <i>G. B.</i>	Fig No. 1025-2

N.T.S. NO.  
82 M/12W

## Introduction

During July 25 to August 1, 1983 a soil sampling program was carried out on the Crown 1 mineral claim situated about 15 km southeast of the town of Clearwater, B. C. Field work was supervised by G. Belik of G. Belik and Associates Ltd., 664 Sunvalley Drive, Kamloops, B. C.

The 1983 program was carried out in order to refine and further evaluate areas of anomalous soil geochemistry (Cu,Pb,Zn) within a priority target area identified by previous geochemical and geophysical surveys.

## Claims

The property is comprised of 2 contiguous claims totalling 28 units as detailed below:

<u>Mining Division</u>	<u>Claim Name</u>	<u>Units</u>	<u>Record No.</u>	<u>Date Recorded</u>
Kamloops	Crown 1	20	1344(8)	Aug. 14/78
"	Crown 6	8	1349(8)	Aug. 14/78

The registered owner of the above claims is Union Oil Co. of Canada Ltd., 335 - 8th Avenue S.W., Calgary, Alberta.

### Location and Accessibility

The Crown Property is located along the south side of the North Thompson Valley in the Kamloops Mining Division, B. C. (N.T.S. 82M/12W). The center of the property is centered about 100 km north-northeast of Kamloops at geographic co-ordinates  $51^{\circ}33'$  North Latitude and  $119^{\circ}50'$  West Longitude. The southern part of the claim area is traversed by logging roads which are accessible via good gravel road from Birch Island.

### General Geological Setting

The Crown claims are underlain by a tilted, strongly deformed, low-grade regionally metamorphosed sequence of volcanic and sedimentary strata of probable paleozoic age. Campbell (1962) mapped these rocks as part of the Eagle Bay Formation - a group of similarly deformed and metamorphosed rocks which are flanked on the east by the higher metamorphic grade Shuswap Metamorphic Complex and on the west by relatively undeformed and unmetamorphosed rocks of the Fennel



Formation, Nicola Group and Cache Creek Group.

Within the area of the Crown 1 and 6 claims the Eagle Bay Formation is represented by a predominantly volcanic succession of rocks of felsic to intermediate composition. This succession includes a coarse fragmental volcanic unit which is flanked by quartz-feldspar lapilli and crystal tuffs. Throughout the volcanics small lenses of volcaniclastic sediment and graphitic phyllite occur.

#### Soil Geochemistry

In total 128 soil samples were taken during the 1983 program. Of these, 49 were "B" horizon samples and 79 were deep "C" horizon samples. "B" horizon samples were taken in order to supplement the results of a 1979 survey. Deep "C" horizon samples, which were collected with the aid of a power auger, were taken in order to determine changes, if any, in soil geochemistry with depth.

Deep "C" horizon samples were collected at 25 meter intervals along segments of lines 4+00E, 7+50E, 9+25E and 10+00E. Intervals sampled coincided with bedrock conductors and/or zones of anomalous I.P. The south end of line 10+00E

was sampled in order to evaluate a magnetic high feature.

All samples collected were analysed for gold, silver, copper, lead and zinc by Acme Analytical Laboratories Ltd., located at 852 East Hastings Street, Vancouver, B. C.

#### Sampling Procedure

"B" horizon samples were obtained by digging holes with a maddock to a depth of 10 cm to 30 cm, depending on soil development at each sample location. The samples were placed in waterproof kraft envelopes and the grid station was marked on the envelopes with indelible felt pens.

Deep "C" horizon samples were collected utilizing a 2-man, gasoline-powered auger with a 15 cm bit. Samples were taken at the bottom of each hole and placed in waterproof kraft envelopes marked with the grid station. Samples collected generally were taken from an unweathered, grey to buff, boulder till unit. Locally, a pebbly clay unit was evident.

The power auger was capable of reading a depth of 1.5 meters. Where possible this depth was attained, however, because of tough overburden conditions, many sample sites were less than 1.0 meters. The minimum sample depth attained was 0.5 meters.

#### Laboratory Determination Method

All samples were first dried and then sieved to obtain a -80 mesh fraction. The determination procedure was as follows:

	<u>Digestion</u>	<u>Determination</u>
Copper	-0.5 gm sample is digested with 3 ml of HCL, HNO <sub>3</sub> and water (3:1:3) at 90°C for 1 hour and then diluted to 10 ml with water	-Atomic Absorption
Lead		
Zinc		
Silver		
Gold	10.0 gm sample is ignited and then digested in hot aqua regia	-Atomic Absorption

Results are reported from Acme Labs in parts per million for copper, lead, zinc and silver and in parts per billion for gold.

### Presentation of Results

Results of the soil analyses are shown on plan maps 1025-3 ("B" samples) and 1025-4 (Auger samples) at a scale of 1:5,000. Both maps show conductor axes and zones of anomalous I.P. effects. Map 1025-3 incorporates geochemical data obtained from a 1979 survey.

### Discussion of Results

Results of the 1983 soil survey are summarized below:

	<u>No.</u>	<u>Range</u>	<u>Background</u>	<u>Probably Anomalous</u>	<u>No. of Anomalous Samples</u>
Copper	128	4-342 ppm	26 ppm	72 ppm	25
Lead	128	6-138 ppm	30 ppm	60 ppm	15
Zinc	128	31-926 ppm	95 ppm	160 ppm	23
Silver	128	0.1-2.1 ppm	0.4 ppm	0.8 ppm	14
Gold	128	5-20 ppb	5-10 ppb	20 ppb	0

Background values and anomaly thresholds for copper, lead, zinc and silver were determined by statistical analysis of 1979 and 1983 data. Gold values are low and are considered to fall with the background range for this element.

### "B" Horizon

Most of the anomalous values in copper, lead and zinc in "B" horizon samples occur between lines 5+00E and 11+50E. Within this area three main anomalous zones have been recognized.

A cluster of moderately anomalous zinc values and locally anomalous copper and lead occur in the north central part of the grid area between lines 5+00E and 7+50E. The strongest part of the anomaly occurs on line 7+25E, 18+00N-21+00N and line 7+50E, 19+00N-20+75N. The south edge of the anomaly core coincides with a V.L.F.-E.M. cross-over and a strong Induced Polarization/Resistivity anomaly.

Anomalous copper, zinc and locally lead is associated with a moderate to strong Induced Polarization anomaly in the central part of the grid area between lines 7+25E and 11+50E. The core of the anomaly appears to be centered between lines 9+25E and 10+00E at about 17+00N.

A small area of moderate to strongly anomalous copper occurs between lines 10+00E and 11+50E centered at about 12+00N. This anomaly, which is associated with a small magnetic high, falls outside the area surveyed by I.P./

Resistivity and ground V.L.F.-E.M.

Auger Samples

Auger samples were taken in order to provide detailed coverage over some of the priority geophysical anomalies and to determine changes in soil geochemistry with depth. In general there is good correlation between the two horizons sampled.

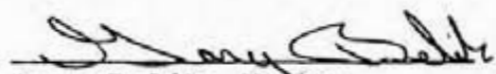
On line 9+25E a moderate copper anomaly was found to extend from 14+25N to 17+75N with a sharp cut-off to the south. This anomaly is associated with elevated silver values and with high zinc values along its north, down-slope edge. The anomaly, although weaker, appears to continue east to line 10+00E where it coincides with an Induced Polarization anomaly.

Moderately anomalous copper and zinc values were detected along the north end of line 7+50E. This anomaly is associated with a strong I.P./Resistivity anomaly and a V.L.F.-E.M. anomaly. The anomaly appears to terminate abruptly immediately upslope from the V.L.F.-E.M. crossover.

### Conclusions and Recommendations

The general geological setting within the area of the Crown claims suggests a good potential for volcanogenic massive sulphide deposits. Within the northern half of the Crown 1 claim several potentially significant bedrock conductors and I.P./Resistivity anomalies have been identified which locally correlate well with soils moderate to strongly anomalous in copper, lead and zinc. In order to evaluate these coincident geophysical/geochemical targets a trenching program followed by diamond drilling, if warranted, is recommended.

Respectfully Submitted

  
Gary Belik, M. Sc.  
G. Belik and Associates Ltd.

Kamloops, B. C.  
September 19, 1983

APPENDIX I

Assay Certificates



**GEOCHEMICAL ASSAY CERTIFICATE**

A .500 GM SAMPLE IS DIGESTED WITH 3 ML OF 3:1:3 HCL TO HNO3 TO H2O AT 90 DEG.C. FOR 1 HOUR.  
 THE SAMPLE IS DILUTED TO 10 MLS WITH WATER. ELEMENTS ANALYSED BY AA : CU, PB, ZN, AG.  
 SAMPLE TYPE : SOIL - DRIED AT 60 DEG C., -80 MESH.  
 AU\* - 10 GM, IGNITED, HOT AQUA REGIA LEACH MIBK EXTRACTION, AA ANALYSIS.

ASSAYER Dean Toy DEAN TOYE, CERTIFIED B.C. ASSAYER

G. BELIK & ASSOCIATES GROUP-A FILE # 83-1474 PAGE# 1

SAMPLE	CU PPM	PB PPM	ZN PPM	AG PPM	AU* PPB
18+50N 4E	37	51	86	.1	5
18+25N 4E	36	48	80	.1	5
18N 4E	46	55	93	.2	5
17+75N 4E	44	59	86	.3	5
17+50N 4E	81	57	104	.4	20
17+25N 4E	57	70	80	.3	5
17N 4E	49	57	89	.5	5
22N 7+50E	38	40	71	.2	5
21+75N 7+50E	51	81	96	.5	5
21+50N 7+50E	45	88	260	.7	5
21+25N 7+50E	27	25	83	.4	5
21N 7+50E	123	71	926	.6	5
20+75N 7+50E	49	47	222	.6	5
20+50N 7+50E	28	39	140	.2	5
20+25N 7+50E	34	38	108	.3	5
20N 7+50E	283	98	497	.8	5
19+75N 7+50E	75	52	104	.2	5
19+50N 7+50E	35	27	73	.1	5
19+25N 7+50E	28	41	106	.2	5
19N 7+50E	34	39	139	.2	5
18+75N 7+50E	20	30	96	.1	5
18+50N 7+50E	27	27	78	.1	5
18+25N 7+50E	19	29	91	.2	5
18N 7+50E	17	25	72	.1	5
17+75N 7+50E	24	27	87	.1	5
17+50N 7+50E	23	34	94	.1	5
17+25N 7+50E	24	31	79	.2	5
17N 7+50E	17	52	168	.4	5
16+75N 7+50E	29	54	121	.2	10
16+50N 7+50E	18	32	115	.2	5
16+25N 7+50E	27	44	114	.2	5
16N 7+50E	62	91	310	.7	5
15+75N 7+50E	26	53	146	.4	5
15+50N 7+50E	22	35	164	.3	5
15+25N 7+50E	6	17	118	.2	5
15N 7+50E	46	50	89	.3	5
14+75N 7+50E	28	39	127	.3	5

SAMPLE	CU PPM	PB PPM	ZN PPM	AG PPM	AU* PPB
14+50N 7+50E	22	30	77	.1	5
14+25N 7+50E	23	25	150	.3	5
14N 7+50E	19	19	151	.5	5
18+50N 9+25E	47	25	250	.4	5
18N 9+25E	60	75	300	.5	5
17+75N 9+25E	304	84	568	1.1	5
17+50N 9+25E	177	50	400	.4	5
17+25N 9+25E	65	33	184	.4	5
17N 9+25E	100	26	177	.5	5
16+75N 9+25E	214	48	145	1.1	5
16+50N 9+25E	227	27	60	1.0	5
16+25N 9+25E	37	22	116	.4	5
16N 9+25E	123	32	90	.8	5
15+75N 9+25E	242	50	125	1.4	5
15+50N 9+25E	5	12	66	.4	5
15+25N 9+25E	335	44	105	1.7	5
15N 9+25E	290	80	127	1.4	5
14+75N 9+25E	342	56	96	1.7	5
14+50N 9+25E	147	96	123	.7	5
14+25N 9+25E	261	27	85	1.1	5
14N 9+25E	13	19	124	1.0	5
19N 10E	35	45	68	.3	5
18+75N 10E	25	29	76	.3	5
18+50N 10E	32	34	69	.2	10
18+25N 10E	24	23	65	.2	5
18N 10E	20	28	71	.7	5
17+75N 10E	74	45	365	.3	5
17+50N 10E	34	56	111	.2	5
17+25N 10E	32	31	127	.2	5
17N 10E	91	46	131	.2	5
16+75N 10E	104	66	225	.8	5
16+50N 10E	225	118	397	1.7	15
16+25N 10E	34	43	158	.2	5
16N 10E	84	138	325	.3	5
14N 10E	35	37	86	.1	5
13+75N 10E	36	26	112	.2	5

SAMPLE	CU PPM	PB PPM	ZN PPM	AG PPM	AU* PPB
13+50N 10E	38	20	78	.1	5
13+25N 10E	16	22	117	.2	5
13N 10E	179	36	56	1.1	5
12+75N 10E	24	22	73	.9	5
12+50N 10E	31	35	77	.2	5
12+25N 10E	22	30	75	.2	5

SAMPLE	CU PPM	PB PPM	ZN PPM	AG PPM	AU* PPB
13N 9+25E	28	14	112	.3	5
12+50N 9+25E	9	13	102	.6	5
12N 9+25E	20	17	85	.3	5
11+50N 9+25E	26	21	95	.4	5
11N 9+25E	17	31	79	.3	5
10+50N 9+25E	11	13	37	.2	5
10N 9+25E	10	14	61	.5	5
23+50N 10E	8	20	62	.2	5
22+50N 10E	17	19	78	.3	5
21+50N 10E	27	12	31	.2	5
20+50N 10E	15	14	76	.3	5
19+50N 10E	10	23	79	.3	5
18+50N 10E	8	24	97	.1	5
17+50N 10E	13	36	184	.3	5
16+50N 10E	108	136	305	.6	5
15+50N 10E	6	22	145	.4	5
14+50N 10E	31	65	134	.3	5
13+50N 10E	12	23	168	.5	5
12+50N 10E	7	14	55	.3	15
11+75N 10E	287	30	89	1.2	10
11+50N 10E	18	19	90	.3	5
10+50N 10E	20	22	69	.4	5
20+50N 11+50E	7	9	64	.3	5
20N 11+50E	14	14	69	.3	5
19+50N 11+50E	31	16	57	.2	5
19N 11+50E	30	19	55	.2	5
18+50N 11+50E	13	16	105	.3	5
18N 11+50E	14	15	87	.3	5
17+50N 11+50E	9	7	90	.2	5
17N 11+50E	82	16	404	2.1	5
16+50N 11+50E	4	11	97	.6	5
16N 11+50E	7	21	127	.4	5
15+50N 11+50E	35	44	163	.2	5
14N 11+50E	17	24	179	.3	5
13+50N 11+50E	10	15	130	.8	5
13N 11+50E	12	19	149	.9	5

SAMPLE	CU PPM	PB PPM	ZN PPM	AG PPM	AU* PPB
23+50N 12+50E	6	17	67	.3	5
22+50N 12+50E	9	15	61	.3	5
21+50N 12+50E	10	25	74	.4	5
20+50N 12+50E	8	6	66	.1	5
19+50N 12+50E	11	17	67	.5	5
18+50N 12+50E	9	11	43	.3	5
17+50N 12+50E	25	14	54	.3	5
16+50N 12+50E	10	28	87	.5	5
15+50N 12+50E	8	25	113	.7	5
14+50N 12+50E	25	21	76	.3	5
13+50N 12+50E	14	19	126	.5	5
12+50N 12+50E	6	20	80	.4	5
11+50N 12+50E	8	19	90	.6	5

APPENDIX II

Statement of Expenditures

STATEMENT OF EXPENDITURES

Union Oil Company of Canada Ltd.

Geochemical Survey, Crown Property, Kamloops Mining Division,  
British Columbia.

1. LABOUR:

G. Belik, M.Sc., (July 25, Aug. 2, 1983) -1.5 days @ \$250.00/day	\$ 375.00	
D. Arens (July 25 - Aug. 1, 1983) -8.0 days @ \$140.00/day	1,120.00	
B. Cross (July 25 - Aug. 1, 1983) -8.0 days @ \$130.00/day	<u>1,040.00</u>	\$2,535.00

2. TRUCK RENTAL:

-8.0 days @ \$35.00/day	280.00	
-1045 km @ \$0.20/km	<u>209.00</u>	489.00

3. EQUIPMENT RENTAL:

-power auger		145.00
--------------	--	--------

4. GEOCHEMICAL ANALYSES:

1,011.20

5. FOOD AND ACCOMODATION:

638.42

6. FIELD SUPPLIES:

51.95

\$4,870.57

APPENDIX III

Statement of Qualifications

Gary D. Belik



**GARY D. BELIK, M.Sc.**

Consulting Geologist  
Mineral Exploration

#5 NICOLA PLACE, 310 NICOLA STREET • KAMLOOPS, B.C. V2C 2P5 • PHONE (604) 374-4247

CERTIFICATE

I, GARY D. BELIK, OF THE CITY OF KAMLOOPS, BRITISH COLUMBIA, DO HEREBY CERTIFY THAT:

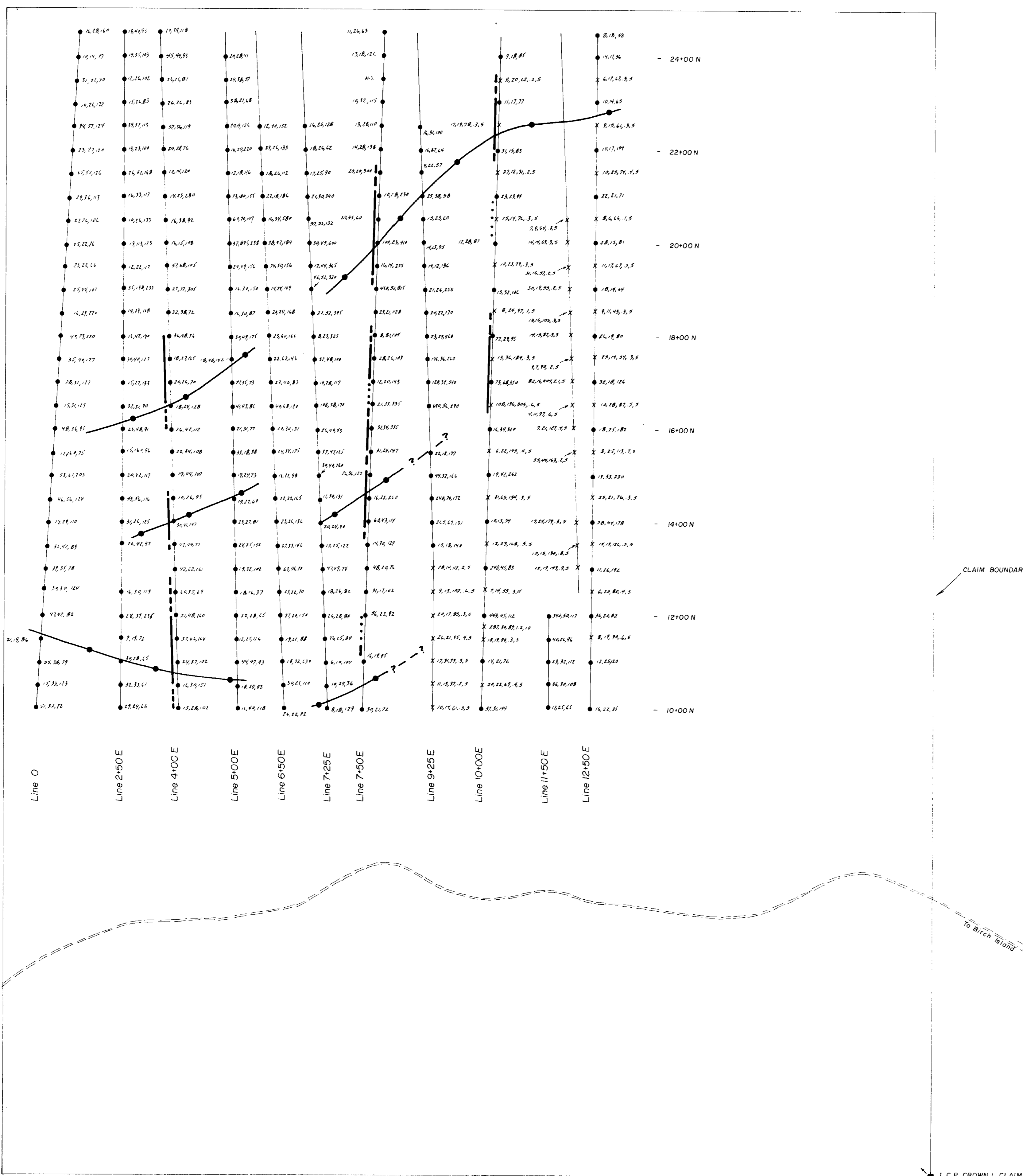
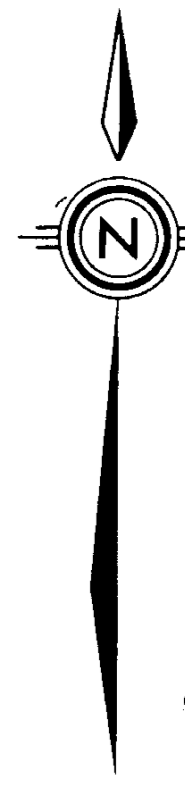
- (1). I am a member of the Canadian Institute of Mining and Metallurgy, and a fellow of the Geological Association of Canada.
- (2). I am employed by G. Belik and Associates Ltd., with my office at 664 Sunvalley Drive, Kamloops, B. C.
- (3). I am a graduate of the University of British Columbia with a B.Sc. in Honors Geology and a M.Sc. in Geology.
- (4). I have practised continuously as a geologist since May, 1970.



Gary D. Belik, M.Sc.,  
Geologist

KAMLOOPS, B. C.

September 19, 1983



**LEGEND**

- CLAIM POST
- == ACCESS ROAD
- ┆ GRID LINE WITH STATION LOCATION
- VLF CONDUCTOR AXIS (1979 SURVEY)
- INDUCED POLARIZATION ANOMALY (1982 SURVEY)
- DEFINITE
- - - PROBABLE
- POSSIBLE
  
- 'B' HORIZON SAMPLE SITE - 1979 (CU, PB, ZN)
- X 'B' HORIZON SAMPLE SITE - 1983 PROGRAM (CU, PB, ZN, AG, AU)

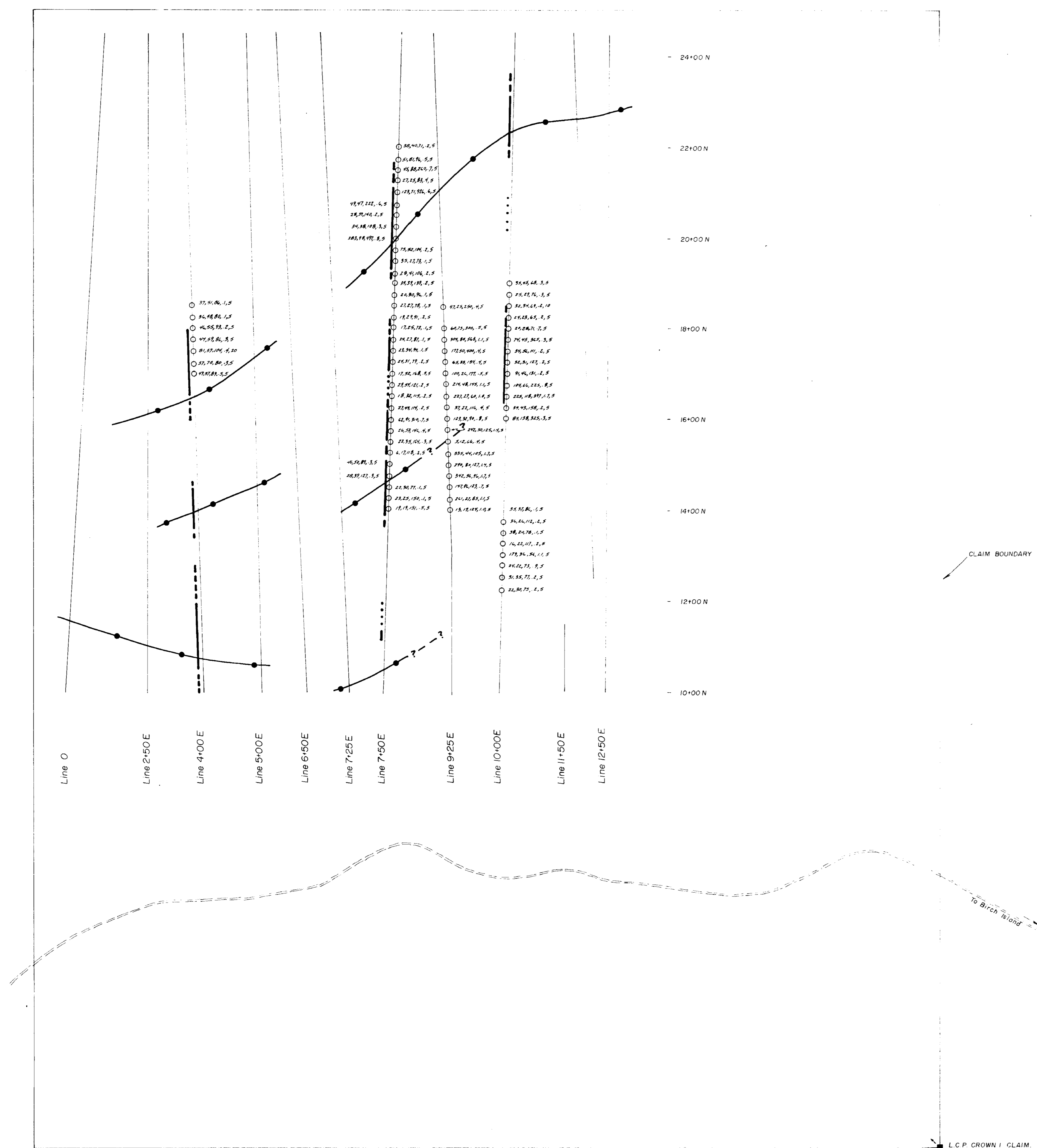
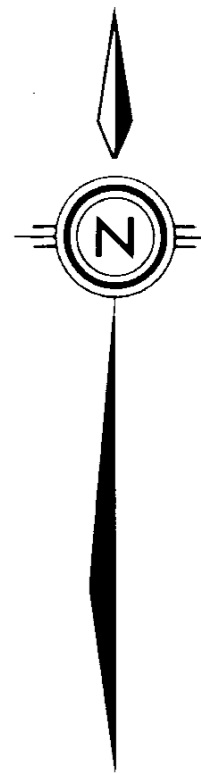
**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,462**

UNION OIL COMPANY OF CANADA LTD.

**GEOCHEMICAL PLAN  
'B' HORIZON  
CROWN #1 CLAIM**

KAMLOOPS MINING DIVISION, BRITISH COLUMBIA  
TECH WORK BY: G. BELIK AND ASSOC. LTD. SCALE: 1:5,000  
DRAWN BY: DATE: SEPT. 1983.  
APP'D BY: G. BELIK, M.Sc. FIG. NO. 1025-3



**LEGEND**

- CLAIM POST
- ACCESS ROAD
- ⊥ GRID LINE WITH STATION LOCATION
- VLF CONDUCTOR AXIS (1979 SURVEY)
- INDUCED POLARIZATION ANOMALY (1982 SURVEY)
- DEFINITE
- - - PROBABLE
- · · · · POSSIBLE
- AUGER SAMPLE SITE (1983 PROGRAM)
- GEOCHEMICAL VALUES FOR Cu, Pb, Zn, Ag, Au, AND PPM FOR Cu, Pb, Zn, Ag

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**11,462**

UNION OIL COMPANY OF CANADA LTD.	
<b>GEOCHEMICAL PLAN (AUGER SAMPLES)</b>	
<b>CROWN #1 CLAIM</b>	
KAMLOOPS MINING DIVISION, BRITISH COLUMBIA.	
TECH WORK BY: G. BELIK AND ASSOC. LTD.	SCALE: 1:5,000 0 50 100m 200
DRAWN BY: <i>[Signature]</i>	DATE: SEPT 1983.
APP'D BY: G. BELIK, M.Sc.	FIG. NO. 1025-4

To accompany a report by G. Belik, M.Sc.