



1979 Geological & Geochemical
Assessment Report



TITLE DYCER CREEK PROPERTY
CLAIMS HAL 1-60 Inclusive
COMMODITY W

LOCATED Pelly Mountains, Yukon Territory
Latitude 61°24'N Longitude 137°56'W
Whitehorse Mining District 3
105 F 5 & 105 E 8

BY A.C. Hitchins

FOR AMAX of Canada Limited

WORK PERIOD July 20 - July 26, 1979

090 618

AMAX VANCOUVER OFFICE



This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of

\$ 9000

H. M. K.

Resident Geologist or
Resident Mining Engineer

Considered as representation work under
Section 53 (4) Yukon Quartz Mining Act.

E. R. Baxter
E. R. BAXTER
Supervising Mining Recorder

for
Commissioner of Yukon Territory

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SUMMARY

The Hal 1-60 claims are located in the Pelly Mountains, Yukon half-way between Ross River and Whitehorse. The claims were staked in June 1979 to cover nine miles of contact between the Cretaceous Dycer Creek stock and Lower Cambrian carbonates and schists. Skarn bands up to 15 feet thick are developed where the carbonates are in contact with the quartz monzonite. Grab samples of skarn assay up to 2% WO_3 ; a pyrrhotite boulder assayed 13% WO_3 .

Two tungsten soil anomalies at either end of the property appear to be related to mineralization which is not exposed.

Detailed prospecting and soil sampling of the entire contact area followed by a magnetic survey is recommended to search for additional thicker skarn bands.

INTRODUCTION

The Hal 1-60 claims were staked in early June 1979 to acquire approximately nine miles of contact between the Cretaceous Dycer Creek stock and Lower Cambrian carbonates.

The property is located in the Pelly Mountains (105 F 5) half-way between Ross River and Whitehorse, 30 miles west of the South Canal Road. The claims cover several ridges which extend to elevations ranging between 4000 and 6500 m. Stunted fir exist only on the lower south facing slopes. Alpine mosses and sedges are the dominant flora over most of the property.

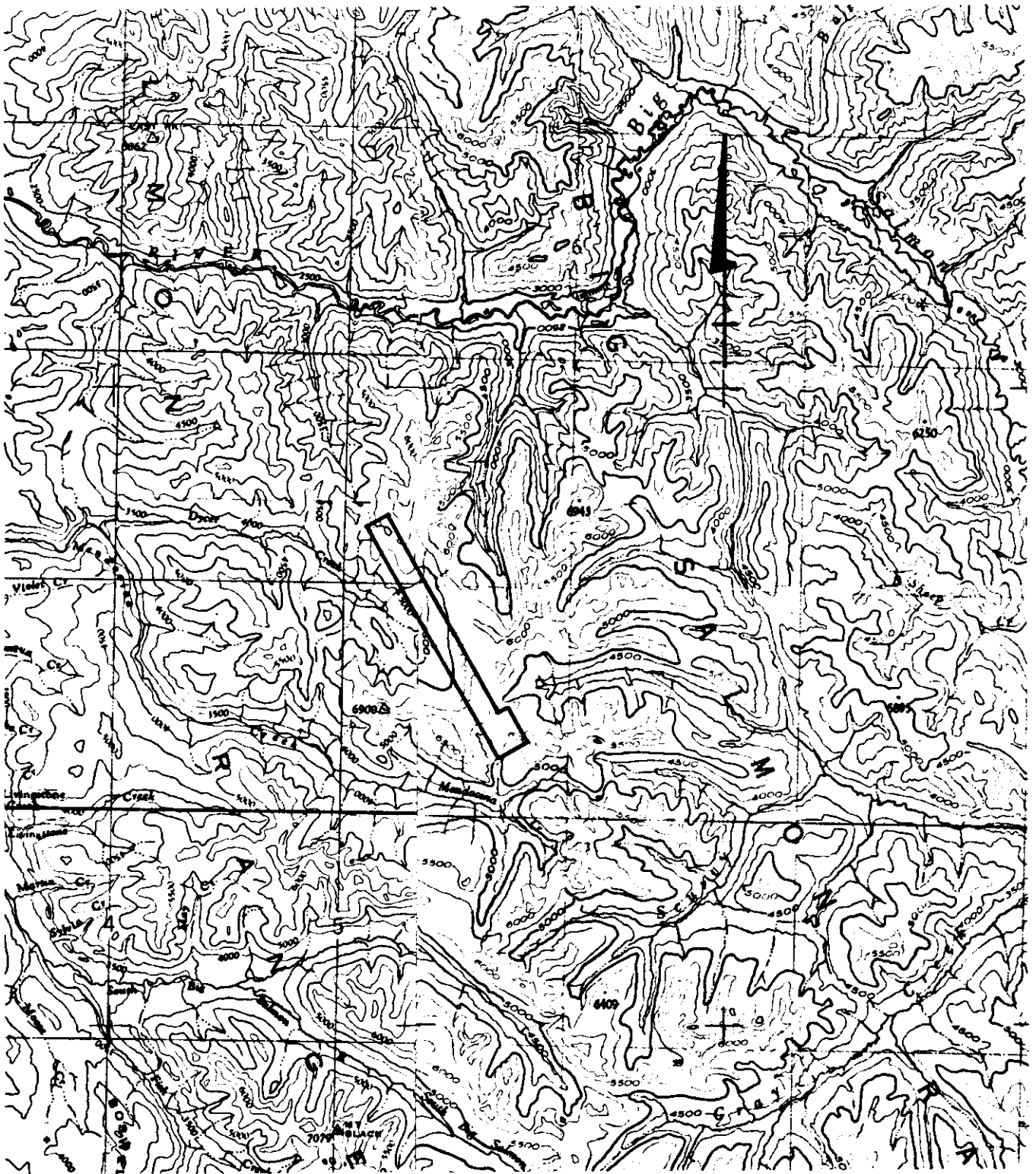
Previous Work

The Quiet Lake map sheet has been mapped by Wheeler et al (Map 7-1960) and Templeman Kluit (Open File 486) for the G.S.C.

A recent flag and picket grid was located just east of the central claims. No old claim posts were noted during the property work.

REGIONAL GEOLOGY

The Cretaceous quartz monzonite Dycer Creek stock has intruded a northwest striking metasedimentary succession of Windermere to Cambrian biotite-muscovite-quartz-feldspar schist with bands and lenses of light grey crystalline marble. Ordovician to Lower Devonian siltstones and slates of Nasina Facies are in fault contact with the older schists. The Dycer Creek stock, which has domed the metasediments around part of its perimeter, may be an off-shoot of the much larger Quiet Lake Batholith exposed four miles to the south.



AMAX OF CANADA LIMITED

DYCER CREEK PROPERTY

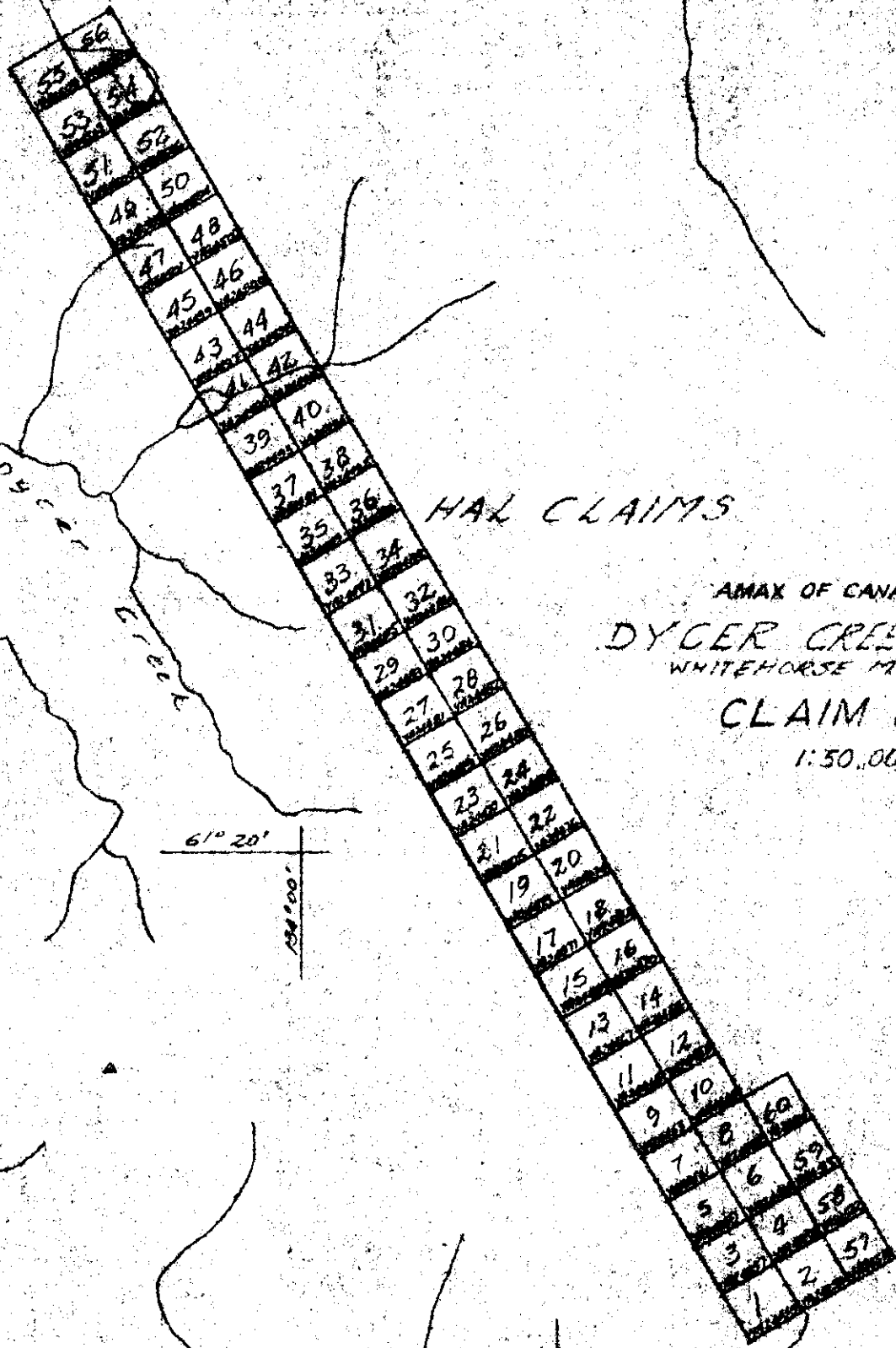
WHITEHORSE M.D. — YUKON TERRITORY

LOCATION MAP



1:250,000

N.T.S. Ref. 105E8, 105F5.



HAL CLAIMS

AMAX OF CANADA LIMITED
 DYGER CREEK PROPERTY
 WHITEHORSE M.D. - YUKON
 CLAIM MAP
 1:50,000

PROPERTY GEOLOGY

Initial interest in the area of the Hal claims was generated by G.S.C. Open File 486 which showed a six mile long contact between Lower Cambrian marble and the Cretaceous Dycer Creek stock. Grab samples of garnet-pyroxene skarn collected during prospecting assayed between 0.24 and 2.1% WO_3 .

The main rock types exposed on the property are described below and depicted in Figure

The Dycer Creek stock (*Kgm*) consists of coarse grained subporphyritic to porphyritic, generally fresh, jointed, biotite quartz monzonite. Quartz veins and quartz-sericite veins are scattered through the intrusive but are often slightly more common at the monzonite-metasediment contact. Veins are generally randomly oriented and may be up to seven feet wide. Narrow fine grained quartz-feldspar and aplite dykes (*Kgf*) are present but never common along the contact. Towards the south-east portion of the contact feldspars are destroyed in a local patch of argillic alteration.

Deformed chloritic to amphibolitic dykes (*EOb*) of possible Late Cambrian to Ordovician age are occasionally exposed in Lower Cambrian carbonate rocks.

The lowest exposed metasedimentary unit comprises an interbedded sequence of biotite muscovite schist (*P/Es*) and marble (*EC*) of Lower Cambrian to Windermere age. Where the schist is adjacent to the quartz monzonite the contact is gradational and characterized by the development of feldspar metacrysts in the schist, general increase in grain size in the schist, dykes and sills of fine grained quartz-feldspar±muscovite, and quartz and quartz-garnet veins. The marble is usually a light to medium grey crystalline calcite with minor irregular patches and bands of tan weathering dolomite. At least one outcrop of marble contains ovoid (1"-2" diameter) silicified

patches dotted with numerous small pits that may represent organic remains. Smears of wollastonite needles on bedding planes weather to form low ribs in the marble. Where there has been weak silicification and minor development of pale coloured calc-silicate minerals the marble is mapped as Unit

. Contact between quartz monzonite and marble has produced garnet-pyroxene-pyrrhotite skarn bands; up to four separate bands separated by relatively unaltered light grey marble.

MINERALIZATION

Two types of mineralization were noted on the property:

- a) Narrow veins of bornite-malachite-pyrite in silicified marble are rare and will not be discussed further.
- b) Pyroxene-garnet-pyrrhotite skarn bands generally contain variable amounts of scheelite as crystals and disseminations. Scheelite is associated with 2-50% pyrrhotite in skarn bands but the converse is not true. Float boulders of massive pyrrhotite with no visible scheelite have been found along the intrusive-metasedimentary contact.

Skarn bands range in thickness from 1 to 15 feet and occur only if the marble (*Ec*) is in contact with quartz monzonite. Skarn bands are developed immediately adjacent to the contact but may also occur as a series of bands up to 250 feet away from the contact but parallel to foliation in the marble and schist. These skarn bands are separated by relatively unaltered greyish marble.

There has been no systematic attempt to chip across the skarn bands but grab samples of mineralized skarn usually assay between 0.1 and 2.0% WO_3 . A float boulder of pyrrhotite rich skarn from the north end of the property contained 13% WO_3 .

GEOCHEMISTRY

Geochemical results for tungsten are plotted on Figure 4 and analytical values for Mo, Cu, Ni, Co, Mn, Fe, Ag, Pb and Zn are presented in Appendix III.

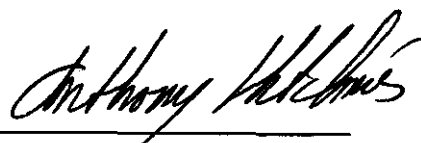
Although only a hundred soil samples were collected parallel to intrusive-metasedimentary contact the results suggest that scheelite bearing skarn bands are presented by 15 to 120 ppm tungsten in down slope soil and talus samples. If this is the case then a soil anomaly at the southern end of the property and one at the extreme northern end may indicate unexposed skarn bands.

DISCUSSION AND RECOMMENDATIONS

Predliminary mapping and sampling of the Hal 1-60 claims has outlined three areas of narrow scheelite bearing skarn bands developed at the contact between Lower Cambrian marble and the Cretaceous quartz monzonite Dycer Creek stock. Where bands of mica schists are present between the intrusive and the marble, skarn development is inhibited. Future work should search for bulges or faults in the intrusive margin which move the quartz monzonite across the schist band into direct contact with the marble.

Known scheelite mineralization is reflected in down slope soil anomalies of between 15 and 120 ppm tungsten. Two soil anomalies, one at either end of the property, are removed from known mineralization and should be prospected in detail. A detailed geochemical soil survey should be conducted over the property.

The ubiquitous occurrence of scheelite in pyrrhotite bearing skarns should be pursued with a magnetometer survey to examine the possibility of down-dip extensions of skarn bands and search for hidden skarn.



A.C. Hitchens

LIST OF CLAIMS

	<u>Grant Numbers</u>	<u>Anniversary Date</u>
HAL 1 - HAL 60	YA24455-YA24514	June 14, 1979

APPENDIX I - STATEMENT OF COSTS

Summary of Work - Dycer Creek - Geological & Geochemical

Period of Work - July 20 - July 26, 1979

Personnel

A.C. Hitchins, Geologist, 601-535 Thurlow Street, Vancouver	
July 20-26 7 days @ \$112.56/day	787.92
R.G. Kidlark, Senior Asst., 972 Birchbrook Place, Coquitlam	
July 21-26 6 days @ \$ 57.20/day	343.20
V.F. Grundy, Junior Asst., 2969 Mathers Ave., West Vancouver	
July 21-25 5 days @ \$ 38.45/day	192.25
E.A. Fuller, Senior Asst., 301-6730 Willingdon Ave. Burnaby	
July 25 1 day @ \$ 61.15/day	61.15
A.C. Smallwood, Junior Asst., 7580 Burriss Street, Burnaby	
July 25 1 day @ \$ 39.46/day	39.46

Room & Board 18 days @ \$ 30.00/man day 540.00

Helicopter Support

Terr-Air, Ross River - July 20 & 21 Inv. 5373 & 5380	3,010.50
Trans North Turbo Air, Whitehorse - July 25 & 26	
Inv. 36371 & 36375	2,226.69

Geochemical Analyses

Rosbacher Laboratory, Burnaby - Inv. 9195	
20 assays for Cu @ \$4.00	80.00
20 Mo 5.00	100.00
21 W 8.00	168.00
188 geochem for W 2.00	376.00
41 F 2.75	112.75
170 for 9 elements 3.50	595.00
15 6 2.75	41.25
142 soil prep. .20	28.40
43 rock prep. 1.00	<u>43.00</u>
	1,544.40

Report Writing & Drafting 800.00

TOTAL \$9,545.57

APPENDIX II - CONTRACTOR'S INVOICES

ROSS RIVER YUKON CANADA HELICOPTER CHARTER

terr-air ROTARY LTD. **AIRMAX**

PHONE: 403-988-2240 **AUG 1 1979**

VANCOUVER OFFICE

PROJECT: _____ CHARTER TICKET # **5373**

AIRCRAFT G-117H H-3002 DATE JULY 20, 1979

NAME AIRMAX

ADDRESS _____

FLIGHT/PASSENGER DETAILS		HOURS	MIN	FUEL										
A.R. - Lapie Lakes Camp move (1 load + pass)		4.0		120 g										
<table border="1"> <tr> <th>Flight Number</th> <th>Load Type</th> <th>Altitude</th> <th>Time</th> <th>Remarks</th> </tr> <tr> <td>996</td> <td>-</td> <td>-</td> <td>2:20</td> <td>-</td> </tr> </table>		Flight Number	Load Type	Altitude	Time	Remarks	996	-	-	2:20	-			
Flight Number	Load Type	Altitude	Time	Remarks										
996	-	-	2:20	-										
<table border="1"> <tr> <th>APPROVED</th> <th>DATE</th> </tr> <tr> <td><i>[Signature]</i></td> <td>8/2/79</td> </tr> </table>		APPROVED	DATE	<i>[Signature]</i>	8/2/79									
APPROVED	DATE													
<i>[Signature]</i>	8/2/79													
<table border="1"> <tr> <th>APPROVED</th> <th>DATE</th> </tr> <tr> <td><i>[Signature]</i></td> <td>8/2/79</td> </tr> </table>		APPROVED	DATE	<i>[Signature]</i>	8/2/79									
APPROVED	DATE													
<i>[Signature]</i>	8/2/79													
TOTAL HRS	4.0 • 315.00 PER HR.	1,260.00												
EXTRA CHARGES	120 g @ 1.50/g	180.00												
TOTAL CHARGES		1,440.00												

Charterer's Authorization: *[Signature]* 996
Pilot's Signature: *[Signature]*

ROSS RIVER YUKON CANADA HELICOPTER CHARTER

terr-air ROTARY LTD. **AIRMAX**

PHONE: 403-988-2240 **AUG 1 1979**

VANCOUVER OFFICE

PROJECT: _____ CHARTER TICKET # **5390**

AIRCRAFT G-117H H-3002 DATE JULY 20 + 21, 1979

NAME AIRMAX

ADDRESS _____

FLIGHT/PASSENGER DETAILS		HOURS	MIN	FUEL
R.R. - Lapie Lakes				
20 - Camp move 40 mi w/				
1 pass + load				
1 sling load				
21 - 2 pass + load to camp from R.R.		3.5		20 g
move sling load		1.2		40 g
TOTAL HRS	4.7 • 315.00 PER HR.	1,480.50		
EXTRA CHARGES	60 g @ 1.50/g	90.00		
TOTAL CHARGES		1,570.50		

Charterer's Authorization: *[Signature]* 996
Pilot's Signature: *[Signature]*

TRANS NORTH TURBO AIR LTD.
 801 1110 WHITEHORSE AVENUE, YUKON, Y1A 2T6
 TELEPHONE (403) 668 2177 • TELEFAX (403) 668 2178

ACCOUNT NUMBER	60
INVOICE NUMBER	36371
INVOICE DATE	12-9-79
OFFICE	2002 F.D.P.C.
DATE	25-0-79
PURCHASE ORDER NO.	

AMAX MINERALS
 601 - 535 Thurlow St
 VANCOUVER B.C. V6E 3L6
 (30)

FROM	TO	MILES	HOURS	REMARKS	NO OF PASSENGERS	FREIGHT LBS
ROSS R.	GET - LICAL	15		P-T OUT CREW		
	GET - LICAL	15		PERMUT CREW		
APPROVED: [Signature] DATE: 5/16/79 (30)						

DATE	18-9-75	18-9-75	18-9-75
AMOUNT	6016.50	1125.00	67.98
TOTAL	6016.50	1125.00	67.98

TERMS: EIGHTEEN PERCENT INTEREST PER ANNUM WILL BE CHARGED ON ALL INVOICES NOT PAID WITHIN 30 DAYS OF DATE ISSUED.

Ted Fuller
 [Signature]
 ENGINE

TOTAL \$1929.80
 FLIGHT REPORT INVOICE

TRANS NORTH TURBO AIR LTD.
 801 1110 WHITEHORSE AVENUE, YUKON, Y1A 2T6
 TELEPHONE (403) 668 2177 • TELEFAX (403) 668 2178

ACCOUNT NUMBER	60
INVOICE NUMBER	36375
INVOICE DATE	12-9-79
OFFICE	2002 F.D.P.C.
DATE	25-0-79
PURCHASE ORDER NO.	

AMAX MINERALS
 601 - 535 Thurlow St
 VANCOUVER B.C. V6E 3L6
 (26)

FROM	TO	MILES	HOURS	REMARKS	NO OF PASSENGERS	FREIGHT LBS
ROSS	CAMP MOSE	26		3 MEY CAMP		
APPROVED: [Signature] DATE: 5/16/79 (30)						

DATE	18-9-75	18-9-75	18-9-75
AMOUNT	6016.50	975.00	58.71
TOTAL	6016.50	975.00	58.71

TERMS: EIGHTEEN PERCENT INTEREST PER ANNUM WILL BE CHARGED ON ALL INVOICES NOT PAID WITHIN 30 DAYS OF DATE ISSUED.

[Signature]
 [Signature]
 J. DOUGLAS ENGINEER

DATE	18-9-75	18-9-75	18-9-75
AMOUNT	26	375.00	975.00
TOTAL	26	375.00	975.00

TOTAL \$16337.10
 FLIGHT REPORT INVOICE

Rossbacher Laboratory

GEOCHEMICAL ANALYSTS & ASSAYERS

2225 S. SPRINGER AVE.,
 BURNABY, B. C.
 CANADA
 TELEPHONE: 299-6910
 AREA CODE: 604

AFAX MINERALS EXPLORATION

601-535 Thurlow St.

Vancouver, B.C.

Project 996

DATE Aug 27, 1979

INVOICE NO. 9195

9077-3,4,6,8;

CERTIFICATE NO. 9136-1to6; 9140, 1to2

9192-1to7; 9196-1to11

ITEM	DESCRIPTION		SUB-TOTAL	TOTAL
677	Geochem analysis for 9 elements	3.50	2,369.50	
546	W	2.00	1,092.00	1044.00
1	Sn	2.00	2.00	
442	F	2.75	1,275.50	1215.50
52	Au	2.50	130.00	
140	Soil prep	0.20	28.00	
546	Rock prep	1.00	546.00	
18	Assays for tot Mo	5.00	90.00	
18	Cu	4.00	72.00	
19		8.00	152.00	
	Freight		189.00	189.05

APPROVED		DATE		
<i>[Signature]</i>		9/5/79		
Project Number	Order Date	Invoice No.	Sub Total	Amount
996	-	8910	-	5,898.05

OK 18558 SEP 6 - 1979

5,898.05
~~5,946.05~~

TERMS - NET 30 DAYS

APPENDIX III

Rossbacher Laboratory

GEOCHEMICAL ANALYSTS & ASSAYERS

CERTIFICATE OF ANALYSIS

TO: AMAX MINERALS EXPLORATION
801 - 535 THURLOW ST.
VANCOUVER, B.C.

2225 S SPRINGER AVE.
BURNABY, B.C.
CANADA
TELEPHONE 299-8910
AREA CODE: 604
CERTIFICATE NO. 9196-8

INVOICE NO. 9195
DATE ANALYSED 79/07/30
PROJECT 996

No.	Sample	pH	Mo	Cu	Ni	Co	Mn	Fe	Ag	Zn	Pb	W	No.
01	79AVS 357		1	28	32	16	540	2.2	0.2	74	14	15	01
02	358		2	69	39	16	700	2.5	0.4	90	20	30	02
03	359		2.4	92	24	20	860	3.5	0.8	86	28	400	03
04	360		1	30	20	12	380	1.8	0.2	58	8	20	04
05	361		1	32	34	36	860	2.9	0.2	80	8	20	05
06	362		1	41	34	20	880	2.7	2.0	279	172	15	06
07	363		1	46	36	22	960	2.5	0.6	264	126	15	07
08	364		1	28	44	24	700	2.5	0.2	68	20	20	08
09	365		1	28	26	16	680	2.2	0.2	98	24	10	09
10	366		1	26	22	16	680	2.1	0.2	88	12	5	10
11	367		1	26	22	16	440	2.1	0.2	70	10	10	11
12	368		1	40	40	24	440	3.6	0.2	210	58	15	12
13	369		1	36	42	28	580	3.9	0.4	102	16	0	13
14	370		1	24	30	18	500	2.6	0.2	68	12	15	14
15	371		1	28	14	12	220	2.8	0.2	56	4	5	15
16	372		1	26	30	16	280	2.5	0.2	72	10	20	16
17	373		4	20	20	8	400	2.1	0.4	58	10	10	17
18	374		2	26	24	12	200	1.9	0.2	80	10	10	18
19	375		2	28	28	14	340	2.2	0.2	78	10	15	19
20	STD F		4	26	42	6	320	3.0	0.2	124	16	0	20
21	376		1	28	22	12	300	2.1	0.2	78	6	10	21
22	377		2	24	22	8	180	1.7	0.4	78	2	12	22
23	378		2	24	34	16	280	2.9	0.4	82	2	15	23
24	379		1	30	32	12	280	2.6	0.2	80	4	10	24
25	380		3	38	32	16	620	2.6	0.4	94	6	15	25
26	381		1	16	10	8	320	1.7	0.2	40	10	10	26
27	382		2	40	36	20	580	2.9	0.4	96	12	15	27
28	383		1	26	14	8	420	2.3	0.4	68	8	10	28
29	384		2	24	26	12	560	2.6	0.2	66	10	10	29
30	385		1	24	28	12	360	3.0	0.2	68	6	15	30
31	386		2	24	18	8	520	2.1	0.2	62	8	5	31
32	387		2	22	18	8	280	2.1	0.2	56	8	10	32
33	388		2	22	38	20	500	3.0	0.2	82	8	5	33
34	389		1	34	34	30	680	2.6	0.2	72	10	15	34
35	390		2	62	36	20	600	3.2	0.2	104	14	15	35
36	391		2	54	44	20	500	3.6	0.2	92	8	40	36
37	392		1	80	20	8	400	2.1	0.2	64	10	20	37
38	393		1	26	22	12	280	2.5	0.2	70	8	25	38
39	394		2	20	20	8	540	2.5	0.2	66	6	10	39

Rossbacher Laboratory

GEOCHEMICAL ANALYSTS & ASSAYERS

CERTIFICATE OF ANALYSIS

TO: AMAX MINERALS EXPLORATION
801 - 535 THURLOW ST.
VANCOUVER, B.C.

2225 S SPRINGER AVE.
BURNABY, B.C.
CANADA
TELEPHONE 299-8910
AREA CODE: 604
CERTIFICATE NO. 9196-9

INVOICE NO. 9195
DATE ANALYSED 79/07/30
PROJECT 996

No.	Sample	pH	Mo	Cu	Al	Co	Mn	Fe	Ag	Zn	Pb	W	No.
01	79AVS 395		1	20	20	16	360	2.3	0.2	94	12		01
02	396		1	16	14	10	400	2.2	0.2	76	8		02
03	397		3	16	14	12	560	2.2	0.2	58	10		03
04	398		1	12	12	8	280	1.8	0.2	60	6		04
05	399		2	16	16	12	520	2.6	0.2	80	22		05
06	400		1	26	24	14	680	3.1	0.2	108	18		06
07	401		1	16	18	10	320	2.8	0.2	68	10		07
08	402		1	14	18	12	280	2.6	0.2	64	16		08
09	403		1	12	10	8	200	1.9	0.4	42	6		09
10	404		1	10	8	6	200	1.6	0.4	42	4		10
11	405		2	10	16	8	240	1.9	0.4	52	10		11
12	406		1	6	4	6	200	1.2	0.2	26	4		12
13	407		1	8	8	6	180	1.7	0.2	38	10		13
14	408		1	12	10	6	180	1.8	0.2	46	8		14
15	409		1	16	8	8	160	2.0	0.2	40	6		15
16	410		1	12	8	6	120	1.6	0.4	32	8		16
17	411		1	12	16	8	200	2.0	0.2	44	6		17
18	412		1	8	6	4	160	1.3	0.2	30	6		18
19	413		1	10	6	4	220	1.4	0.2	48	4		19
20	STD C		18	208	58	14	202	1.5	0.8	132	54		20
21	414		1	10	8	8	200	1.2	0.2	42	4		21
22	415		1	12	6	6	240	1.4	0.2	52	4		22
23	416		1	8	4	4	240	1.0	0.2	38	4		23
24	417		1	12	14	10	400	1.7	0.4	60	8		24
25	418		1	8	8	4	280	1.2	0.2	44	4		25
26	419		1	10	6	4	200	1.2	0.2	44	4		26
27	420		1	26	30	20	800	4.7	0.8	204	30		27
28	421		1	26	22	12	280	2.1	0.8	138	38		28
29	422		1	12	12	6	240	1.5	0.4	64	6		29
30	423		1	14	16	10	280	2.1	0.4	80	12		30
31	424		1	16	16	8	280	2.0	0.2	76	10		31
32	425		1	18	18	12	280	2.3	0.2	82	14		32
33	426		1	20	22	14	280	2.1	0.2	110	16		33
34	427		1	18	22	12	400	2.5	0.2	88	12		34
35	428		1	22	32	18	680	3.5	1.6	380	80		35
36	429		1	60	34	24	1280	7.4	6.0	880	930		36
37	430		1	26	40	24	960	4.0	0.4	188	36		37
38	431		1	20	50	16	640	2.8	0.2	118	26		38
39	432		1	14	18	10	320	2.5	0.4	80	34		39

Rossbacher Laboratory

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VANCOUVER, B.C.

2225 S. SPRINGER AVE.
BURNABY, B.C.
CANADA
TELEPHONE: 299-6910
AREA CODE: 604
CERTIFICATE NO. 9196-2
INVOICE NO.
DATE ANALYSED 79/08/17
PROJECT 996

No.	Sample	pH	Mo	Cu	Ni	Co	Mn	Fe	Ag	Zn	As	W	F	No.
01	79ATT 90		1	32	12	12	320	1.4	0.6	42	110	0	730	01
02	91		1	28	8	4	240	0.4	0.2	26	48	0	580	02
03	92		1	4	12	8	120	0.8	0.2	52	56	0	760	03
04	L 93		1	16	14	14	520	1.8	0.2	118	34	0		04
05	94		1	18	12	8	280	1.3	0.2	80	20	5		05
06	95		1	10	8	8	240	1.3	0.2	54	6	5		06
07	T 96		1	14	34	32	600	5.0	0.2	80	16	0	1070	07
08	97		1	68	34	48	960	5.2	0.2	274	276	20	520	08
09	98		1	28	40	28	200	3.3	0.2	96	28	0	1010	09
10	L 99		1	20	16	12	420	2.1	0.2	180	22	0		10
11	T 100		1	4	8	6	160	0.6	0.6	16	26	0	500	11
12	101		1	6	12	10	260	1.6	0.2	52	10	0	710	12
13	L 102		1	12	6	8	240	1.4	0.2	56	8	0		13
14	103		1	10	10	10	320	1.6	0.2	62	6	0		14
15	104		1	10	12	8	280	1.5	0.2	58	6	0		15
16	105		4	28	40	16	440	2.4	0.2	208	10	0		16
17	106		1	12	14	10	320	1.4	0.2	62	8	0		17
18	107		1	22	38	30	560	4.6	0.2	82	48	10		18
19	T 108		1	56	42	52	800	7.8	0.2	100	16	0	790	19
20	STD 5		2	132	6	4	120	0.5	3.8	550	106	20		20
21	109		1	4	8	8	160	0.8	0.2	30	14	0	520	21
22	T 110		1	24	26	240	46	0.2	176	6	1			22
23	111		1	12	20	1000	9.5	0.2	76	8	1			23
24	112		4	24	10	19	320	1.3	0.4	56	16	135	1300	24
25	L 113		2	28	24	16	640	2.7	0.6	194	44	0		25
26	T 114		2	22	12	10	120	1.3	1.0	12	44	30	1300	26
27	L 115		1	10	10	8	280	1.5	0.2	54	8	0		27
28	T 116		2	560	48	70	120	7100	0.4	50	2	5	300	28
29	L 117		1	16	20	14	320	2.4	0.2	84	10	0		29
30	118		3	14	18	12	460	2.0	0.2	78	16	0		30
31	119		1	8	6	6	240	1.0	0.2	38	6	5		31
32	120		1	6	8	8	200	1.3	0.2	56	4	10		32
33	T 121		1	6	12	10	280	1.6	0.2	40	8	0	820	33
34	122		1	10	10	12	280	1.4	0.2	44	6	0	820	34
35	L 123		1	8	10	10	320	1.4	0.2	44	6	5		35
36	124		1	10	12	10	360	1.8	0.2	58	4	0		36
37	T 125		1	10	10	12	280	1.8	0.2	60	26	30	650	37
38	126		2	40	8	14	200	7.0	0.6	44	42	10	1940	38
39	127		2	74	34	26	280	1.9	0.2	72	12	5	1650	39
40			2	130	6	4	120	0.7	3.8	540	104	15		40

Rossbacher Laboratory

GEOCHEMICAL ANALYSTS & ASSAYERS

CERTIFICATE OF ANALYSIS

TO: AMAX MINERALS EXPLORATION
801 - 535 THURLOW ST.
VANCOUVER, B.C.

2225 S. SPRINGER AVE.
BURNABY, B.C.
CANADA
TELEPHONE: 299-6910
AREA CODE: 604
CERTIFICATE NO. 9196-2
INVOICE NO.
DATE ANALYSED 79/08/17
PROJECT 996

No.	Sample	pH	Mo	Cu	Ni	Co	Mn	Fe	Ag	Zn	As	W	F	No.
01	79 ATT 128		1	20	2	12	280	1.6	0.2	66	12	0		01
02	T 129		1	14	24	1640	2.1	0.2	2840	16	1			02
03	L 130		1	24	24	560	2.6	0.2	100	12	0			03
04	131		1	24	18	14	340	1.7	0.2	76	8	0		04
05	132		1	24	18	16	360	2.1	0.6	114	12	0		05
06	133		1	20	10	8	240	1.3	0.2	52	8	0		06
07	134		1	26	40	24	280	3.5	0.2	104	16	5		07
08	135		1	28	16	14	480	2.5	0.2	94	20	5		08
09	T 136		1	18	6	6	120	0.4	0.2	66	24	190	680	09
10	L 137		1	30	14	12	480	2.3	0.4	106	14	0		10
11	138		1	22	12	12	320	2.1	0.2	74	8	0		11
12	T 139		1	16	10	12	320	2.0	0.2	100	8	30	880	12
13	140		1	14	4	6	40	0.6	0.2	10	6	12		13
14	141		1	12	10	34	80	1.7	0.2	8	2	0		14
15	142		1	78	44	30	120	2.5	0.2	6	34	0		15
16	143		1	68	52	40	160	2.3	0.2	20	4	0		16
17	L 144		1	16	30	24	320	2.8	0.2	28	2	0		17
18	145		1	28	28	20	440	2.4	0.2	56	6	0		18
19	146		1	22	30	24	400	2.4	0.2	40	4	5		19
20	STD E		4	28	40	16	320	3.1	0.2	152	14	0		20
21	147		1	26	18	16	420	2.6	0.2	76	14	0		21
22	T 148		1	14	8	10	320	1.4	0.2	38	6	0		22
23	149		1	700	40	242	40	7100	0.6	26	2	0		23
24	150		1	16	26	24	320	1.9	0.2	68	6	0		24

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2225 S. SPRINGER AVE.
BURNABY, B.C.
CANADA
TELEPHONE: 299-6910
AREA CODE: 604

ASSAY WORKSHEET

CLIENT: Ammax Minerals Exploration
601 - 535 Thurlow St. Vancouver, B.C.
PROJECT: 996

CERTIFICATE: 9196
INVOICE NO.:
DATE RECEIVED:
DATE ANALYZED: 79/08/15

No.	Sample	TOT Mn as % S ₂	% Cu	% W0.3	No.
01	79 ATT 110	0.002	0.01	0.98	01
02	111	0.004	0.04	6.32	02
03	120	0.001	0.02	13.0	03

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GEOCHEMICAL ANALYSTS & ASSAYERS

CERTIFICATE OF ANALYSIS

2275 S. SPRINGER AVE.
 BURNABY, B. C.
 CANADA
 TELEPHONE: 299-6910
 AREA CODE: 604
 CERTIFICATE NO. 9196-3

INVOICE NO.
 DATE ANALYSED 79/08/17
 PROJECT 996

TO: AMAX MINERALS EXPLORATION
 601 - 535 THURLOW ST.
 VANCOUVER, B.C.

No.	Sample	PH	Mo	Cu	Ni	Co	Mn	Fe	As	Zn	Pb	W	F	No.
01	79AGT 79	-	-	4	16	16	3600	2.2	0.8	34	12	-	2200	01
02	80	1	-	4	10	8	280	1.7	0.2	38	4	0	320	02
03	81	1	20	28	22	200	1.5	0.2	24	8	0	375	03	
04	82	8	40	20	22	12000	6.1	0.2	92	2	ASSAY	3400	04	
05	83	-	-	40	20	22	240	1.6	0.6	56	8	-	700	05
06	84	2	3000	24	52	200	1.2	0.2	90	2	TD	145	06	
07	85	-	-	26	24	1200	3.6	0.2	50	30	0	190	07	
08	86	2	80	10	6	120	0.5	0.2	50	30	0	310	08	
09	87	1	8	10	6	280	1.1	0.2	52	8	10	3200	09	
10	88	-	-	26	26	14000	5.8	0.2	144	6	-	185	10	
11	89	-	-	16	24	1040	1.6	3.6	134	6	-	5800	11	
12	90	-	-	16	24	16000	3.4	0.6	104	8	-	12000	12	
13	91	-	-	20	24	14800	5.1	0.2	136	2	-	1600	13	
14	92	-	-	28	24	3400	3.8	0.2	86	2	-	270	14	
15	93	-	-	16	26	2800	71.0	1.6	24	2	-	710	15	
16	94	-	-	50	42	160	1.8	0.4	20	4	-	1850	16	
17	95	-	-	16	16	680	4.3	0.6	56	6	-	250	17	
18	96	-	-	12	16	1040	1.8	0.2	98	6	-	2800	18	
19	97	-	-	20	30	22400	7.0	0.4	88	2	-	-	20	
20	STD A	6	26	14	12	440	2.4	0.2	38	20	-	680	21	
21	98	-	-	18	40	720	5.6	0.2	76	4	-	560	22	
22	99	-	-	30	30	3400	3.0	0.2	44	2	-	-	23	
23													24	
24													25	
25													26	
26													27	
27													28	
28													29	
29													30	
30													31	
31													32	
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38													39	
39													40	

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GEOCHEMICAL ANALYSTS & ASSAYERS

2275 S. SPRINGER AVE.
 BURNABY, B.C.
 CANADA
 TELEPHONE: 299-6910
 AREA CODE: 604

ASSAY WORKSHEET

CLIENT: Amax Minerals Exploration
 601 - 535 Thurlow St
 Vancouver, B.C.
 PROJECT: 996

CERTIFICATE: 9196
 INVOICE NO.:
 DATE RECEIVED:
 DATE ANALYZED: 79/08/15

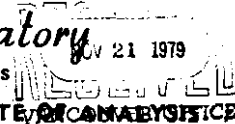
No.	Sample	Tot Mo contents	% Cu	% W03	No.
01	79AGT 79	0.001	0.02	0.32	01
02	82	-	-	0.54	02
03	82	0.006	0.05	0.08	03
04	85	0.001	0.01	0.38	04
05	88	0.002	0.01	0.42	05
06	89	0.001	0.02	0.01	06
07	90	0.001	0.02	0.32	07
08	91	0.002	0.02	1.54	08
09	91	0.001	0.02	0.02	09
10	93	0.001	0.02	2.16	10
11	94	0.001	0.05	0.02	11
12	95	0.004	0.04	1.10	12
13	96	0.002	0.01	1.90	13
14	97	0.006	0.02	1.28	14
15	98	0.002	0.01	0.04	15
16	79AGT 99	0.001	0.04	0.10	16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
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34					34
35					35
36					36
37					37
38					38
39					39
40					40

Rossbacher Laboratory

AMAX

2225 S. SPRINGER AVE.
BURNABY, B. C.
CANADA
TELEPHONE: 299-6910
AREA CODE: 604

GEOCHEMICAL ANALYSTS & ASSAYERS



NOV 21 1979

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 9400-3

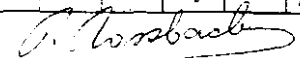
INVOICE NO.

TO: AMAX MINERALS EXPLORATION
801 - 535 THURLOW ST.
VANCOUVER, B. C.

DATE ANALYSED NOV. 18/79

PROJECT 996

No.	Sample	pH	Mo	Cu							W	SG	No.
01	AKS 375										0		01
02	376										0		02
03	377										0		03
04	378										0		04
05	379										0		05
06	400										0		06
07	401										0		07
08	402										0		08
09	403										0		09
10	404										0		10
11	405										0		11
12	406										0		12
13	407										0		13
14	408										0		14
15	409										0		15
16	410										0		16
17	411										0		17
18	412										0		18
19	413										0		19
20	STD A										0		20
21	414										0		21
22	415										0		22
23	416										0		23
24	417										0		24
25	418										0		25
26	419										0		26
27	420										30		27
28	421										105		28
29	422										0		29
30	423										0		30
31	424										5		31
32	425										15		32
33	426										5		33
34	427										0		34
35	428										10		35
36	429										0		36
37	430										0		37
38	431										0		38
39	432										0		39
40	433										0		40

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Kossbacher Laboratory

GEOCHEMICAL ANALYSTS & ASSAYERS

BURNABY, B. C.
CANADA
TELEPHONE 299-6910
AREA CODE 604

April 30, 1974

SUMMARY OF SOME ANALYTICAL TECHNIQUES CURRENTLY IN USE AT ROSSBACHER LABORATORY

A ANALYTICAL TECHNIQUES FOR GEOCHEMICAL SAMPLES

SAMPLE PREPARATION

Packages of samples are opened as soon as they arrive at the laboratory and the bags placed in numerical sequence in an electrically heated sample drier (maximum temperature 70°C).

After drying soil and sediment samples they are lightly pounded with a wooden block to break up aggregates of fine particles and are then passed through a 35 mesh stainless steel sieve. The coarse material is discarded and the minus 35 mesh fraction replaced in the original bag providing that this is undamaged and not excessively dirty.

Rock samples are exposed to the air until the outside surfaces are dry; only if abnormally wet are rocks placed in the sample drier. Rock samples are processed in such manner that a fully representative 1/2 g. sample can be obtained for analysis. The entire amount of each sample is passed through a jaw crusher and thus reduced to fragments of 2 mm. size or less. A minimum of 1 kg. is then passed through a pulverizer with plates set such that 95% of the product will pass through a 100 mesh

Rock Chips

Composite rock chip samples generally consist of some ten small fragments broken from unweathered outcrop with a steel hammer. Each fragment weighs some 50 gms. Samples are placed in strong polythene bags and sealed with non-contaminating wire tabs. Samples are restricted to a single rock type and obvious mineralization is avoided.

Soil, sediment and rock samples are packed securely in cardboard boxes or canvas sacks and dispatched by road or air.

screen. When samples are exceptionally hard, less than 2 g of the material is split after jaw crushing by means of a Jones splitter. After pulverizing the sample is mixed by rolling on paper and is then placed in a Kraft paper bag.

SAMPLE DIGESTION

Digestion tubes (1.30 x 1.5 in) are marked at the 5 ml level with a diamond pencil. Tubes are cleaned with hot water and concentrated HCl. 0.5 g samples are weighed accurately, using a Fisher Dial-G-Grad. balance, and placed in the appropriate tubes.

To each of the samples thus prepared are added 2 ml of an acid mixture comprising 15% nitric and 15% perchloric acids. Caps of tubes are then placed on an electrical hot plate, brought to a gentle boil (1/2 hour) and digested for 4 1/2 hours. Samples unusually rich in organic material are first burned in a porcelain crucible heated by a bunsen burner before the acid mixture is added. Digestion is performed in a stainless steel fume hood.

After digestion tubes are removed from the hot plate and the volume is brought up to 5 ml with deionized water. The tubes are shaken to mix the solution and then centrifuged for one minute. The resulting clear upper layer is used for Cu, Mo, Pb, Mn, Ag, Fe, Na, Ni and Co determination by a Perkin-Elmer 200 atomic absorption spectrophotometer. Analytical procedures are given on the following pages.

ANALYTICAL PROCEDURES

Silver

1. Scope - This procedure covers a range of silver in the sample from less than .5 to 1000 ppm
2. Summary of Method - The sample is treated with nitric and perchloric acid mixture to oxidize organics and sulphides. The silver then is present as perchlorate in aqueous solution. The concentration is determined by atomic absorption spectrophotometer
3. Interferences - Silver below 1 gamma/ml is not very stable in solution. Maintaining the solution in 20% perchloric prevents silver being absorbed on the glass container. Determination must be completed on the same day as the digestion.

Samples high in dissolved solids, especially calcium, cause high background absorbance. This background absorbance must be corrected using an adjacent Ag line.

Silver AA Settings P.E. 290

Lamp - Ag

Current 4 ma position 3

Slit 7 A

Wavelength 3281A Dial 287.4

Fuel - acetylene - flow - 14

Oxidant - air - flow - 14

Burner - techtron AB_51 in line

Maximum Conc. 3 to 4x

Zn Geochemical AA Setting

Lamp Zn

Current 3 #3 Slit 20A

Wave length 2133 Dial 84.9

Fuel - Acetylene Flow 14

Oxidant - Air Flow 14

Burner - P.E. short path 90°

Range

0 - 20 gamma/ml Factor 4x - 0 to 400 ppm

0 - 50 gamma/ml Factor 10x - 0 to 1000 ppm

For Waters - Burner AB- 51 in line 1 gamma/ml read 100 to give 0
to 1000 ppb

High Zn Burner Boling in line. Wavelength 3075. Dial 250 Slit 7A

Fuel 14 Air 14.5

0 to 1000 gamma/ml read 0 to 20 Factor 400 x

Pure Standard 10,000 gamma/ml

1 gm Zn dissolved, H₂O, HCl, HNO₃, HClO₄, fumed to HClO₄ -
make up to 100 mls H₂O

1000, 100 gamma/ml and 100 ml by dilution in 20 % HClO₄

0 to 200 gamma/ml Zn use combined Cu, Ni, Co, Pb, Zn standards

Pipette

1, 2, 3, 5, 8, 10 mls of 10,000 gamma/ml - dilute to 100 mls
with 20% HClO₄ to give

100, 200, 300, 500, 800, 1000 gamma/ml Zn for high standards

Co Geochemical AA Setting

Lamp - 5 multi element

Current 10 #4 Slit 2A

Wavelength 2407 Dial 133.1

Fuel - Acetylene Flow 14

Oxidant - Air Flow 14

Burner - AB 51 in line

Range

0 - 10 gamma/ml read 100 Factor 2 x reading to 200 ppm

0 - 20 gamma/ml read 100 Factor 4 x reading to 400 ppm

Burner at maximum angle

0 - 100 gamma/ml read 100 Factor 20 x reading to 2000 ppm

0 - 200 gamma/ml read 100 Factor 40 x reading to 4000 ppm

Standards - 1000 gamma/ml

1.000 gm cobalt metal dissolved in HCl, HNO₃, and fumed intoHClO₄, dilute to 1 liter

Pipette

1, 2, 10, 20 mls into 100 ml vol flasks diluted to mark
with 20% HClO₄

This gives

10, 20, 100, 200 gamma/ml Co

Mixed - combination standards of Cu, Ni, Co, Pb, Zn

of

1, 2, 5, 10, 20, 30, 50, 80, 100, 150, 200 gamma/ml are used
for calibration

Fe Geochemical AA Setting

Lamp - Fe

- Do not use multi element Fe

Current 10 #4 Slit 2A

Wavelength 3440.6 Dial 317.5

Fuel - Acetylene Flow 14.0

Oxidant - Air Flow 14.0

Burner - PE Short Path 90°

Range

0 - 5000 gamma/ml 0.1 x % - 0 to 10.0%

0 - 10,000 gamma/ml 0.2 x % - 0 to 20.0%

Higher Fe - 10 x dilution

Standards 10,000 gamma/mlWeigh 5.000 gms iron wires, into beaker, add H₂O, HCl, HNO₃,HClO₄, heat to HClO₄ fumes. Add HClO₄ to 100 mls + 100 mlsH₂O, warm, dilute to 500 mls

Pipette

1, 5, 10, 20, 30, 50, 80 mls 10,000 gamma/ml dilute to 100 mls with 20% HClO₄ to give

100, 500, 1000, 2000, 3000, 5000, 8000 gamma/ml to be equivalent to .2, 1.0, 2.0, 4.0, 6.0, 10.0%, 16.0% Fe in geochem sample

Ni Geochemical AA Setting

Lamp P.E. H/C. Ni or multi element Cu, Ni, Co, Mn, Cr

Current 10 #4, Slit 2A

Wave length 3415 Dial 312.5

Fuel - Acetylene Flow 14.0

Oxidant - Air Flow 14.0

Burner AB 51 in line

Range

0 - 20 gamma/ml Factor 4x - 0 - 400 ppm

0 - 100 gamma/ml Factor 20x - 0 - 2000 gamma

45° 0 - 200 gamma/ml Factor 40x - 0 - 4000 ppm

0 - 500 gamma/ml Factor 100x - 0 - 10,000 ppm

Ni in waters and very low ranges

Wave length 2320 Dial 113

Range 0 - 5 gamma/ml Factor 1x - 0 - 100 ppm

Standards 10,000 gamma/ml1.000 gm pure Ni metal dissolved in HCl, HNO₃, HClO₄ to perchloric fumes, dilute to 100 ml H₂O1000 gamma/ml and 100 gamma/ml Successive 10x dilutions in 20% HClO₄

1, 2, 5, 8, 10 mls of 100 gamma/ml

2, 5, 8, 10 mls 1000 gamma/ml

2, 5, 8, 10 mls 10,000 gamma/ml - dilute to 100 mls in 20%

HClO₄. This gives

1, 2, 5, 8, 10, 20, 50, 80, 100, 200, 500, 800, 1000 gamma/ml Ni

Combined Standards - Cu, Ni, Co, Pb, Zn is used as a working standard

Pb Geochemical AA Setting

Lamp ASL H/c Pb

Current 5 ma Slit 7A

Wave length 2833 Dial 208

Fuel - acetylene Flow 14

Oxidant - air Flow 14

Burner AB 51 in line

Range

0 - 20 gamma/ml to read 0 to 80. Factor 5x 0 to 500 ppm

0 - 200 gamma/ml to read 0 to 80. Factor 50x 0 to 5000 ppm

Standards - 10,000 gamma/ml

1.000 pure metal, dissolved in HNO₃, fumed to HClO₄ make up to 100 mls in 20% HClO₄1000 gamma/ml and 100 gamma/ml Successive 10x dilutions in 20% HClO₄

Pipette

1, 2, 5, 8, 10 mls 100 gamma/ml

2, 5, 8, 10, 20 mls 1000 gamma/ml dilute to 100 mls in 20%

HClO₄ this gives

1, 2, 5, 8, 10, 20, 50, 50, 100, 200 gamma/ml

Combined Standards Cu, Ni, Co, Pb, Zn, are used as working standards

W in Soils and Silts

Reagents and apparatus

Test tubes - pyrex disposable

Test tubes - screw cap

Bunsen Burner

Flux - 5 parts Na₂CO₃

4 parts NaCl

1 part KNO₃ pulverized to -80 mesh7% SnCl₂ in 70% HCl20% KSCN in H₂O

Extractant - 1 part tri-n-butyl phosphate

9 parts carbon tetrachloride

Standards

1000 gamma/ml W

.18 gms Na₂WO₄ 2H₂O dissolved in H₂O, make up to 100 mls

100 gamma/ml, 10 gamma/ml by dilution

Standardization

Pipette .5, 1, 2, 3, .5, 8, 10 ml of 10 gamma/ml

and 1.5, 2 mls of 100 gamma/ml - dilute to 10 mls

continue from step #4

Artificial colors - Nabob pure Lemon Extract, dilute with 1:1 ethanol and water to match. Tightly seal these for permanent standards

Procedure

1. Weigh 1.0 gram sample, add 2 gm flux, mix

Water Samples Run for AA

1. Cu - 2 gamma/ml reads 80 scale therefore 1 unit = 25 ppb
2. Zn - 1 gamma/ml reads full scale therefore 1 unit = 10 ppb
3. Ni - 2.5 gamma/ml reads 50 scale therefore 1 unit = 50 ppb

Burner: long slot techtron burner in line

Sulphate in Natural Waters

1. Pipette 0.5 ml sulphate reagent mix into a colorimetric tube
2. Add 5 ml water sample and mix
3. Read at 343 $m\mu$ against a demineralized water blank
4. Read again at 400 $m\mu$ and subtract from sulphate reading
5. Calculate ppm sulphate from the graph

Reagent

Dissolve 54 grams red mercuric oxide (J.T. Baker 2620- Can Lab) in 185 ml 70% perchloric acid and 20 ml H₂O, shake for one hour. Add 46.3 grams ferric perchlorate [Fe(ClO₄)₃ · 6H₂O] (GFS 39) and 47 grams aluminum perchlorate [Al (ClO₄)₃ · 8H₂O] (GFS 2) Add 400 ml water to dissolve, let settle overnight, decant into bottle and make to 1 liter

pH MEASUREMENTS

Soil and drainage sediment samples are dampened with water in a glass beaker to a pasty consistency. Demineralized water is used for this purpose as it has a low buffer capacity and thus does not influence the pH of the sample. Measurement is made with a Fisher Acument pH meter. Electrodes are stored in buffer overnight. A 30 minute warm up time is allowed for the instrument each morning. A 10 ml aliquot is taken from water samples for pH measurement.

ROSSBACHER LABORATORY


P. Rossbacher

APPENDIX IV - STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

NAME	R.G. Kidlark
ADDRESS	972 Birchbrook Place Coquitlam, B.C.
EDUCATION	BSc. Major in Geology University of Toronto 1974
EXPERIENCE	1972 Royal Ontario Museum - Party Chief 1974 Silvermaque Mining - Project Geologist 1974-1976 Brascan Resources - Staff Geologist 1977 Chevron Standard - Senior Assistant 1978 AMAX Minerals Exploration - Senior Assistant 1979 AMAX Minerals Exploration - Senior Assistant

STATEMENT OF QUALIFICATIONS

NAME E.A. Fuller

ADDRESS 301 - 6730 Willingdon Avenue
Burnaby, B.C. V5H 2V8

EDUCATION 1 year Geological Engineering
Queen's University - Kingston

4 years Honours Geology B.Sc.
University of Western Ontario - London

EXPERIENCE 1975 Can. Occidental Petroleum - Field assistant
1976 G.S.C. - Field assistant
1977 G.S.C. - Field assistant
1978 Essex Minerals - Geologist
1978 Donegal Developments - Temporary staking & office work
1979 G.S.C. - Temporary office work
1979 AMAX Minerals Exploration - Geologist

STATEMENT OF QUALIFICATIONS

NAME A.C. Smallwood

ADDRESS 7580 Burris Street
Burnaby, B.C.

EDUCATION 3rd year standing at Simon Fraser University

EXPERIENCE 1977 Newmont Mining - Field Assistant
1978 AMAX Minerals - Field Assistant
1979 AMAX Minerals - Field Assistant

STATEMENT OF QUALIFICATIONS

NAME: A.C. Hitchins

ADDRESS: 601-535 Thurlow Street,
Vancouver, B.C. V6E 3L6

EDUCATION: University of Toronto - B.A. Sc. 1970
University of Toronto - M.Sc. 1973

EXPERIENCE: Amax Potash Limited - Geologist - 1972 to present

STATEMENT OF QUALIFICATIONS

NAME V.F. Grundy

ADDRESS 2969 Mathers Avenue
West Vancouver, B.C.
V7V 2J7

EDUCATION 3rd year Commerce - University of B.C.
Vancouver

EXPERIENCE 1979 AMAX Minerals Exploration - Field Assistant



LEGEND

MID-CRETACEOUS

- Kqm - Light grey weathering biotite quartz monzonite.
- Kqt - Quartz-feldspar dykes, aplite dykes.

UPPER CAMBRIAN TO ORDOVICIAN ?

- EOb - Amphibolite dykes.

LOWER CAMBRIAN

- IEcl - Resistant light grey to dark grey limestone and marble, locally phyllitic marble interbedded with limy phyllite, minor tan weathering dolomitic bands. IEcs - Similar to IEcl but with silicified bands and streaks.
- IEs - Pyroxene-garnet skarn, ± pyrrhotite ± scheelite.
- PIEs - Buff weathering muscovite-biotite schist.

SYMBOLS

- Geological contact
- Outcrop
- Flat
- Bedding or banding
- Schistosity
- Jointing: inclined, vertical
- Fold axis, lineation
- Fault
- Quartz vein
- Po, Bn, Mal, W Pyrrhotite, bornite, malachite, scheelite

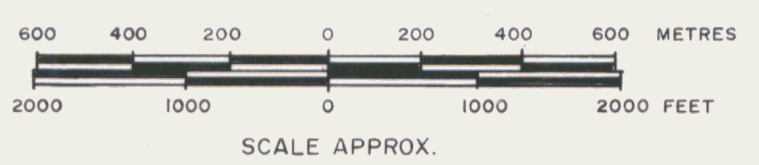
Geology by A.C. Hitchens and Roger Kidark

Anthony Hitchens
Feb 1 1980

AMAX OF CANADA LIMITED

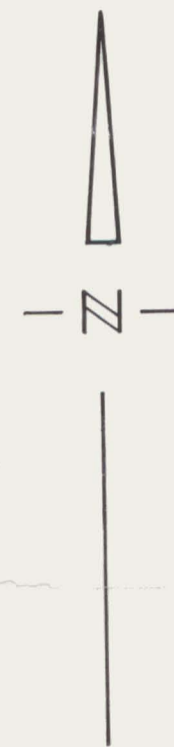
DYCKER CREEK PROPERTY
WHITEHORSE M.D. — YUKON TERRITORY

GEOLOGICAL MAP



To accompany 1979 Assessment Report by A.C. Hitchens

Vancouver - 1979



LEGEND

- 79AV330 ○ Soil
 - 79AV372 ○ Silt
 - 79AB 23 □ Silt
 - 79AB 10 ⊕ Rock chip
- } Sample site, sample number
} p.p.m. W

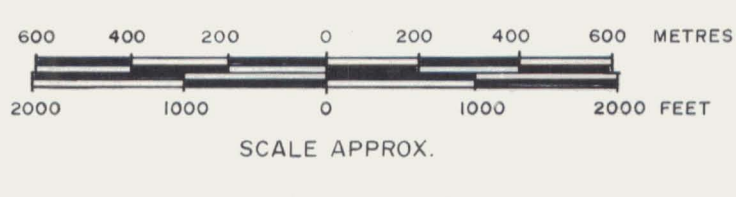
APPROXIMATE PROPERTY BOUNDARY

Anthony Hitchins
Feb 1, 1980

AMAX OF CANADA LIMITED

DYCER CREEK PROPERTY
WHITEHORSE M.D. — YUKON TERRITORY

GEOCHEMICAL MAP



To accompany 1979 Assessment Report by A.C. Hitchins

Vancouver — 1979