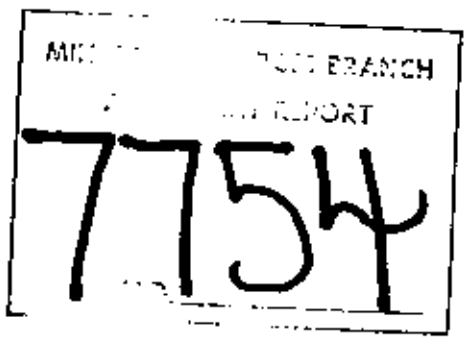
'79-#662-# 7754

1979 Diamond Drilling Assessment Report

TITLE	Erie Creek Property
CLAIMS	June #1-7 inclusive and Reverted Crown Grants: Rosa, Belle, Florence, Bully Boy, Rockford, Ontario, Maude S, Ben Hassen, Arnold, St. Louis, Westminster Fr., Eddie, Louise, Monte Carlo, Homestake, Dora, Copper King, Good Enough, Drum Lemmon, Gordon and Nelson
COMMODITY	Mo, Cu, W
LOCATION	11 km northwest of Salmo, B.C. 23 Latitude 49°~~20'~~ N, Longitude 117°~~20'~~ W Nelson Mining Division NTS 82 F/6W
BY	B.W. Kyba
FOR	AMAX OF CANADA LIMITED
WORK PERIOD	November 3, 1979 - December 14, 1979



AMAX VANCOUVER OFFICE

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SUMMARY

This assessment report presents results of drill hole EC-79-1 on the Erie Creek property on June 1 and 2 claims. The hole was drilled by AMAX of Canada Limited between November 3, 1979 and December 14, 1979.

The property is located 11 km northwest of Salmo in southeastern British Columbia. The property consists of June 1-7 claims and 21 reverted crown granted claims acquired over the period 1976 to 1979. The property is wholly owned by AMAX.

Diamond drill hole EC-79-1, driven to a depth of 452 m (1,483') encountered biotite quartz monzonite, and feldspar porphyry and quartz feldspar porphyry dykes. Molybdenite and minor chalcopyrite and scheelite occur in quartz vein and fracture stockworks.

A field cost of $61,839.01 was applied as assessment to the following claims:

5 years June 1, 3, Good Enough, Copper King, Monte Carlo, Gordon, Nelson, St. Louis, Rockford, Ontario, Westminster Fr., Maude S, Arnold

4 years June 2, Ben Hassen

3 years June 4, 5.

INTRODUCTION

This report documents a one hole diamond drill program carried out on the Erie Creek property in the fall of 1979.

Location and Access

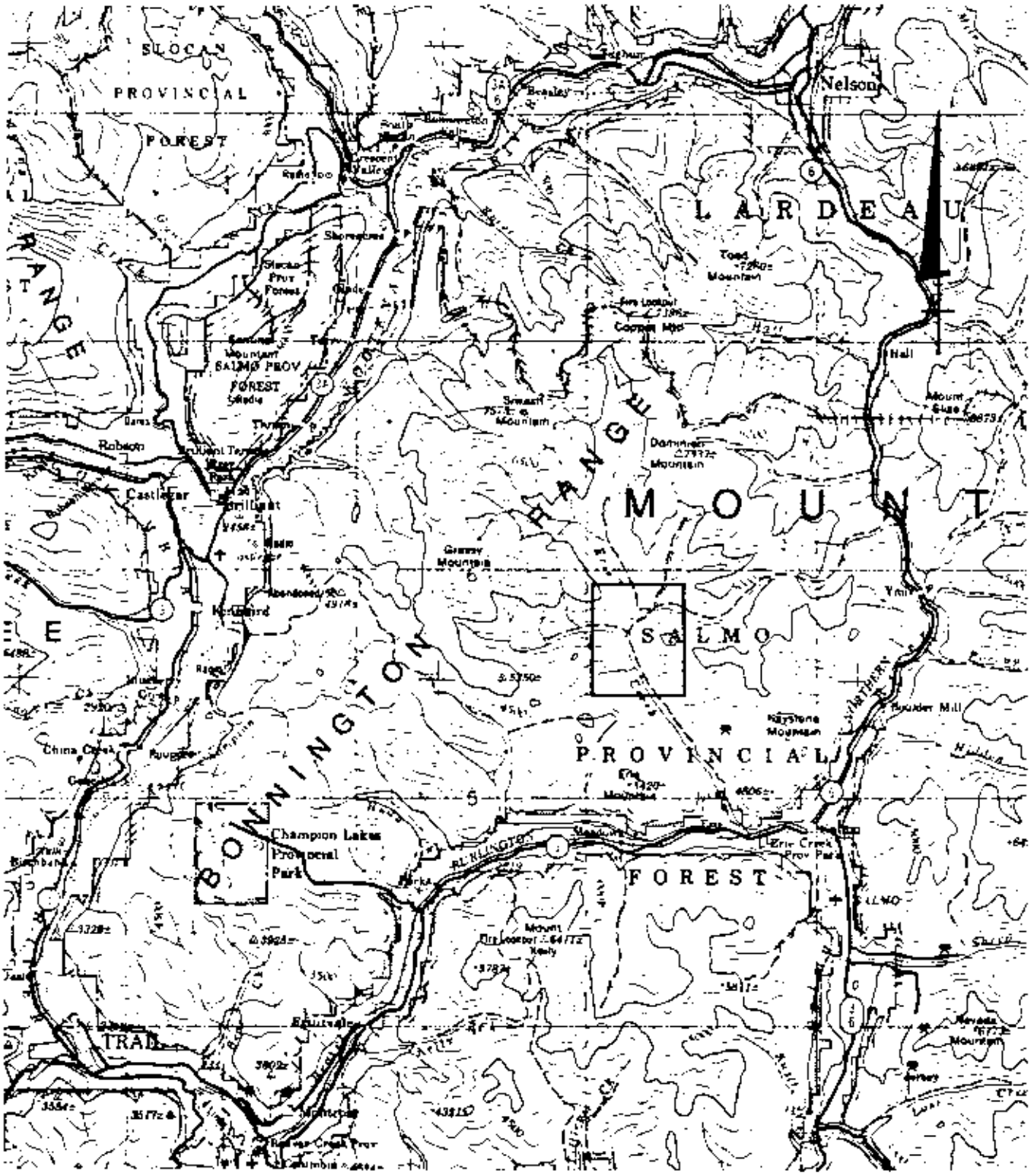
The Erie Creek property is located 11 km northwest of Salmo, B.C. at 49°25'N latitude, 117°20'W longitude in the Nelson Mining Division (NTS 82 F/6) as shown in Figure 1. The property is reached by a well-maintained logging road which intersects Highway 3A 3 km west of Salmo, B.C.

Claims

The property consists of the June 1-7 claims staked on behalf of AMAX Potash Limited and 21 reverted crown granted claims (Figure 2). Claims data are summarized below.

Claim	Record or Lot No.	No. of Units	Expiry Date
June 1	223	4	June 21/80
June 2	224	8	June 21/81
Rosa	859	1	Nov. 23/79
Belle	860	1	"
Florence	861	1	"
Bully Boy	862	1	"
Rockford	863	1	"
Ontario	864	1	"
Maude S	865	1	"
Ben Hassen	866	1	"
Arnold	867	1	"
St. Louis	868	1	"
Westminster FR.	869	1	"
Eddie	870	1	"
Louise	871	1	"
Monte Carlo	907	1	Dec. 15/79
Homestake	908	1	"
Dora	909	1	"
Copper King	910	1	"
Good Enough	911	1	"
Drum Lemmon	912	1	"
Gordon	913	1	"
Nelson	914	1	"
June 3	1017	16	Apr. 18/80
June 4	1018	16	"
June 5	1019	12	"
June 6	1020	6	"
June 7	1021	18	"
		101	

Prior to application of D.D. covered by this report.



AMAX OF CANADA LIMITED

ERIE CREEK PROPERTY

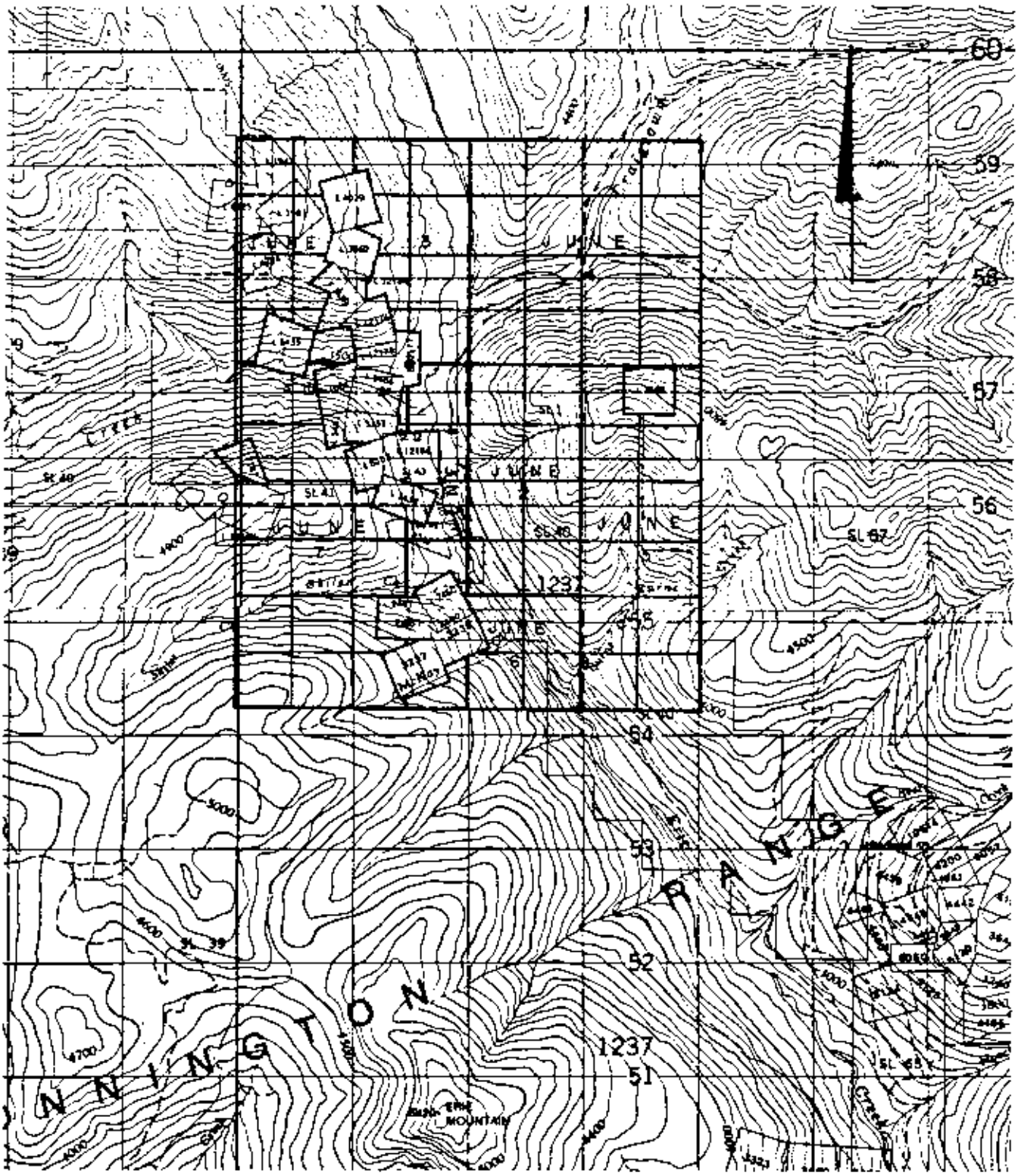
NELSON M. D. — B. C.

LOCATION MAP

SCALE 8 0 8 KILOMETRES
4 0 4 MILES

1 : 250,000

FIG. 1
N. T. S. Ref 82 F3E6



AMAX OF CANADA LIMITED

ERIE CREEK PROPERTY

NELSON M.D. — B.C.

CLAIM MAP

SCALE 2 0 2 KILOMETRES
1 0 1 MILES

1 : 50,000

FIG. 2
N.T.S. Ref. 82F3E6

A geophysical assessment report was filed on the property in November, 1979.

Physiography

The claims lie on the slopes and valley of Eric Creek between elevations 915 and 1400 m (3000 and 4700'). Topography is steep but not rugged.

Outcrop is abundant above alluvium and till that cover the lower slopes and valley of Erie Creek.

Mixed stands of cedar, Douglas fir, balsam fir, hemlock, larch, birch, poplar and alder cover the property. Locally, thick patches of slide alder cover the slopes.

1979 DRILLING

General Statement

One NQ/BQ drill hole was driven to a depth of 452 m (1483') during the period November 3 to December 14, 1979. The drill hole was collared in the valley bottom at elevation 950 m (Figure 3). It was set at an inclination of -60° on a bearing of 100° azimuth. Contractor for the job was Connors Drilling of Vancouver using a Longyear Super 38 drill.

Core recovery averaged better than 98% over the entire hole. All core was logged and split in 4 m intervals. Splits were geochemically analyzed for Mo,Cu,Ni,Co,Pb,Zn,Fe, Ag,Mn,W,Au and Sn by Rossbacher Laboratory, Burnaby. The core was stored on the property.

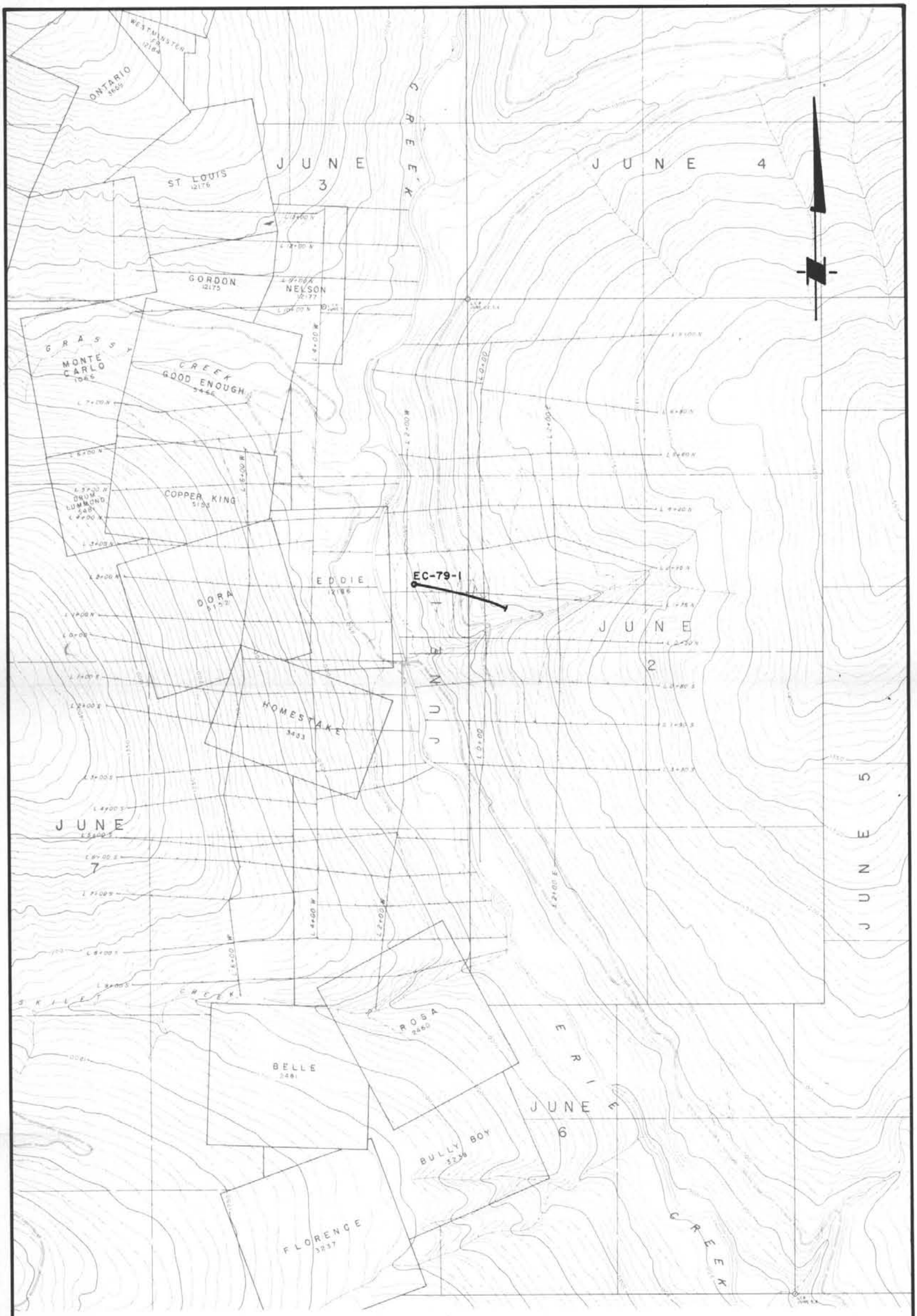
Results

The oldest rock type is a medium grained biotite quartz monzonite (Unit 4). The biotite quartz monzonite has been intruded by numerous dykes of several types, which from oldest to youngest are:

- Unit 5 - pink quartz-feldspar porphyry
- Unit 6 - black feldspar porphyry, feldspar-biotite-quartz porphyry, composite dykes of the above and feldspar megaporphyry dykes
- Unit 8 - light grey quartz feldspar porphyry
- Unit 9 - late black feldspar porphyry and feldspar biotite quartz porphyry dykes.

Units 4 and 5 are pre-mineral, Unit 6 intra-mineral and Units 8 and 9 post-mineral.

Two large faults were intersected in the core, one between 151 and 153 m and a larger one between 206 and 217 m.



AMAX OF CANADA LIMITED

ERIE CREEK PROPERTY

NELSON M.D. – B.C.

DIAMOND DRILL HOLE LOCATION

1600 800 0 800 1600 FEET

400 200 0 200 400 METRES

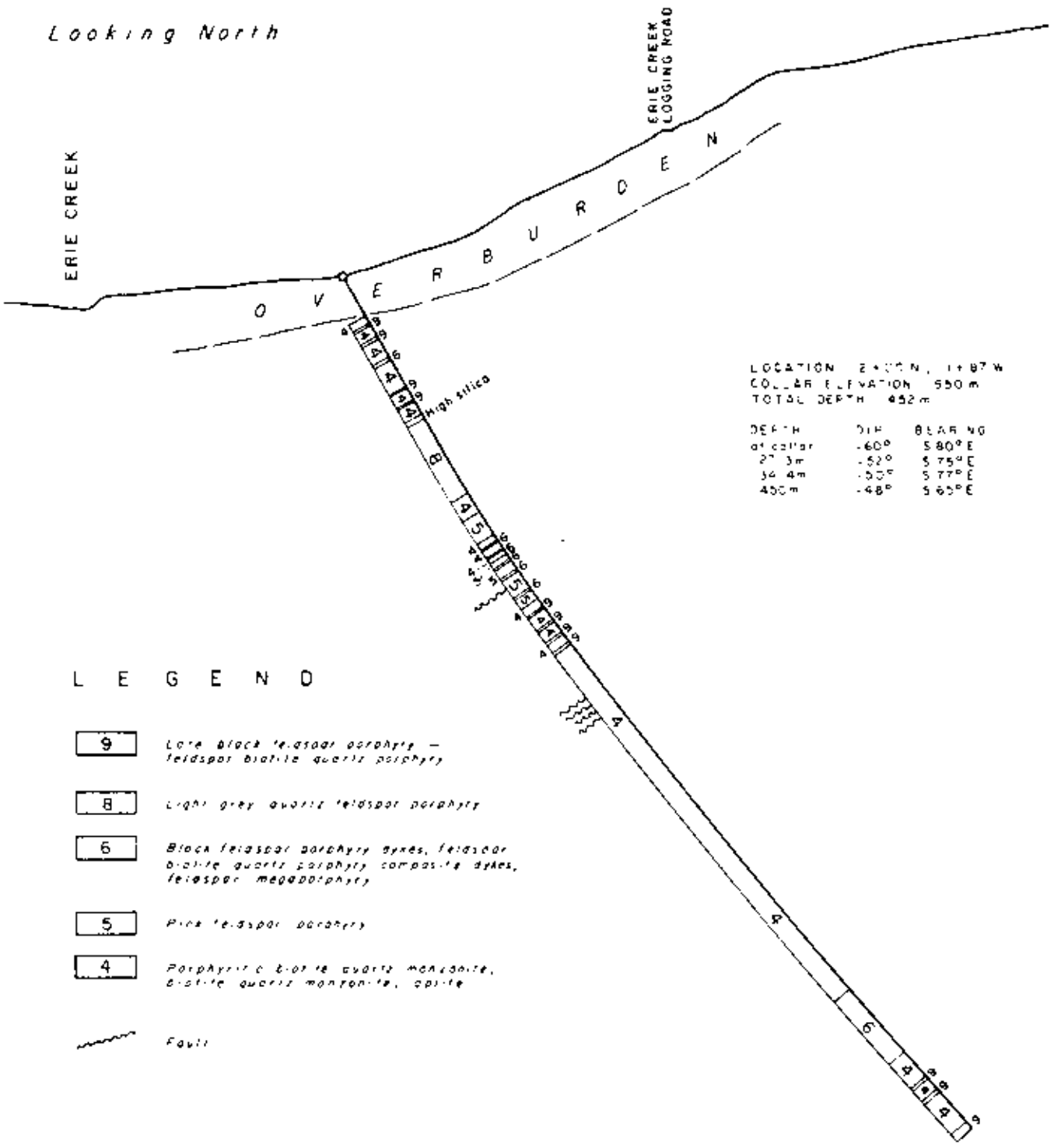
1: 10,000

Vancouver –

MINERAL ... 7754

N.T.S. Ref. 82F 3 and 6

FIG. 3



AMAX OF CANADA LIMITED

ERIE CREEK PROPERTY

NELSON MINING DIVISION — BRITISH COLUMBIA

SECTION ALONG D. D. H. EC-79-1

SCALE 50 0 50 METRES
200 0 200 FEET
1:2,500

Vancouver — B. P.

N. T. S. Ref 82 K 3 and 6

FIG. 4

In the larger fault the original rock has been argillized beyond recognition. Numerous small slips occur throughout the length of the core.

Fracture and quartz vein stockworks (greater than 40 veins and fractures per metre) occur in Units 4 and 5 in the intervals 48-56 m, 104-142 m, 156-127 m, and 296-314 m.

Highest molybdenite grades are coincident with stockwork intervals: the best intersection between 156-210 m of 54 m averages 0.058% MoS_2. Average grade in Unit 4 and 5 (pre-mineral) is 0.025% MoS_2.

Pyrite averages less than 1% throughout the core. Pyrrhotite occurs in trace amounts only.

Chalcopyrite occurs as fracture coatings with pyrite and pyrrhotite and rarely with molybdenite. Copper content averages 200 ppm.

Scheelite occurs rarely as scattered fine grains on fractures and in quartz veins.

A complete drill log is entered in Appendix II.

All sample numbers and results are entered in Appendix III.

B.W. Kyba

APPENDIX I - STATEMENT OF COSTS

Summary of Work — Diamond Drilling - Erie Creek

Period of Work — November 3 - December 14, 1979

Personnel

B.W. Kyba - Geologist, 601-535 Thurlow Street, Vancouver				
Nov. 23 - Dec. 4	12 days @ $110.11/day			1,321.32
L.R. Flint - Technician, 601-535 Thurlow Street, Vancouver				
Nov. 3-25 & Dec.3-14	35 days @ $100.48/day			3,516.80
A.C. Smallwood - Field Asst., 7580 Burris Street, Burnaby				
Dec.10-12	3 days @ $ 39.46/day			118.38

Drilling

Connors Drilling Limited - Vancouver				
Inv. #9888, 9900, 9948 for 452 m of coring NQ/BQ				51,881.01

Geochemical Analyses

RossBacher Laboratory Ltd. - Burnaby					
Inv. 0070	109 samples for 9 elements		@ $3.50	381.50	
	22	W	@ $2.00	44.00	
	11	Au/Sn	@ $4.50	49.50	
	109 rock preparation		@ $2.00	218.00	693.00

Room Rental for AMAX Personnel

Selkirk Motel - Salmo	
Inv. 125703, 125707	546.00

Truck Rental and Equipment Moves

AMAX 4x4 @ $30.00/day for 42 days	1,260.00	
Salmo Transport - Salmo Inv. 388	200.00	
Neil McLean - Fruitvale Inv. 001	225.00	1,685.00

Drill Site Preparation and Site Clean-Up

Broughton Construction - Salmo	877.50	
Boulder Creek Products - Salmo Inv. 12-SC-907	1,200.00	2,077.50

TOTAL $61,839.01

This work is to be applied as follows:

5 years June 1, 3, Good Enough, Copper King, Monte Carlo, Gordon, Nelson, St. Louis, Rockford, Ontario, Westminster Fr., Maude S, Arnold
4 years June 2, Ben Hassen
3 years June 4, 5.

APPENDIX II

DIAMOND DRILL RECORD

PROPERTY ERIE CREEK Project Number 794

Hole No. EC-79-1 Co-ordinates 49°25'N Latitude 117°20'W Longitude

Bearing at Collar 100°

Dip at Collar -60°

Collar Elevation 950 m

Commenced Drilling November 3, 1979

Total Depth 452 m

Completed Drilling December 14, 1979

Logged By B.W. Kyba

Core Size NQ/BQ Coring Method Wireline Drilling Contractor Connors Drilling Limited

Survey Summary			
Depth	Dip	Bearing	Method
0	-60°	100°	Brunton
271.3	-52°	105°	Sperry Sun
341.4	-50°	103°	Sperry Sun
450.0	-48°	115°	Sperry Sun

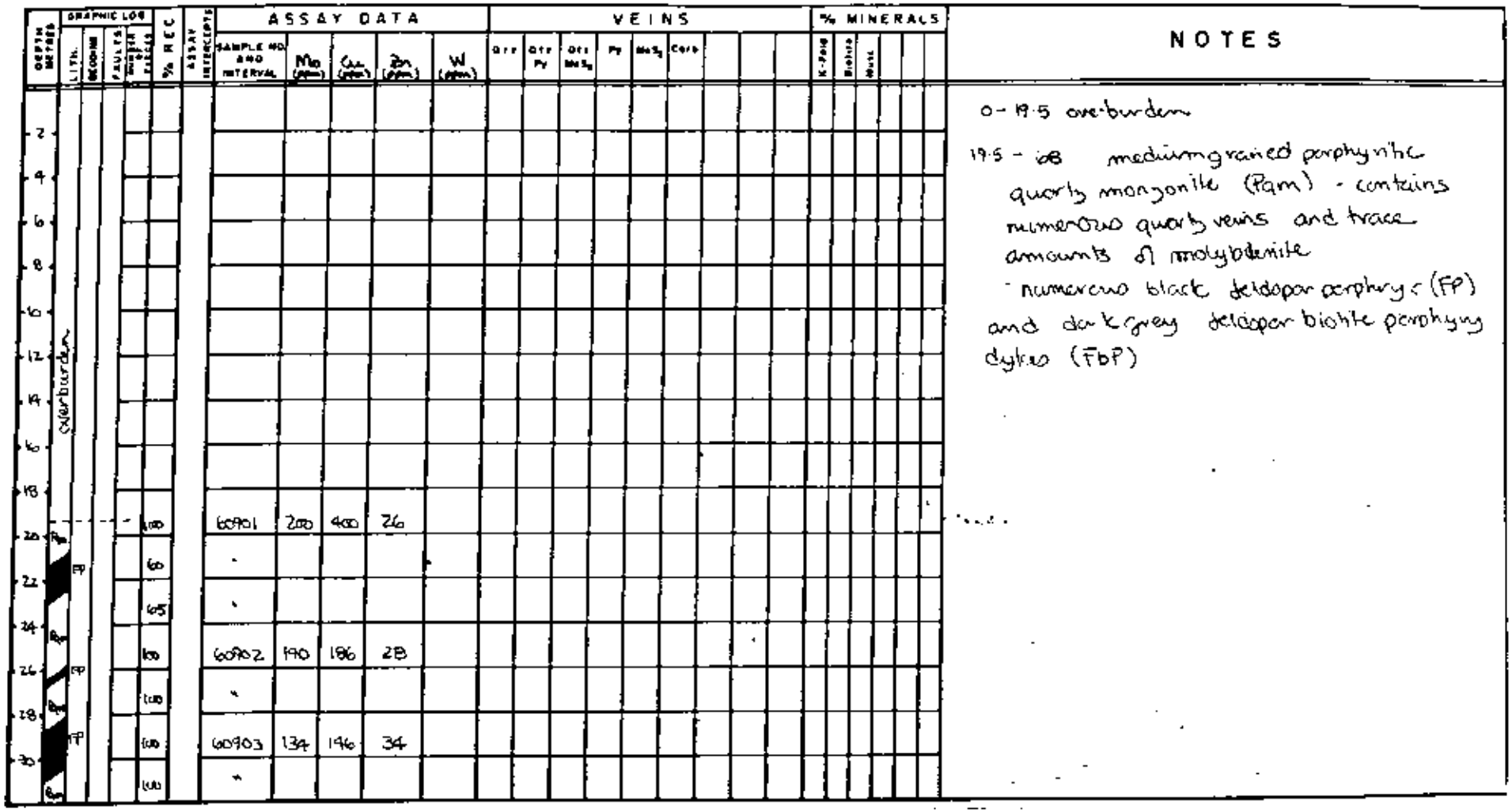
Pertinent Assay Data	
Interval	% MoS
68-72 m	0.08
155-212 m	0.058
164-192 m	0.09

Pertinent Geology	
Interval	Rock Type
0-20	Overburden
20-68	Mineralized biotite quartz monzonite with numerous feldspar porphyry dykes
68-72	High silica rock
72-100	Barren quartz feldspar porphyry dyke
100-452	Mineralized biotite quartz monzonite with quartz porphyry and feldspar porphyry dykes
159-206	Well developed quartz vein stockwork
206-217	Large fault zone

AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

DDH EC 79-1
SHEET 1 OF 15.



NOTES

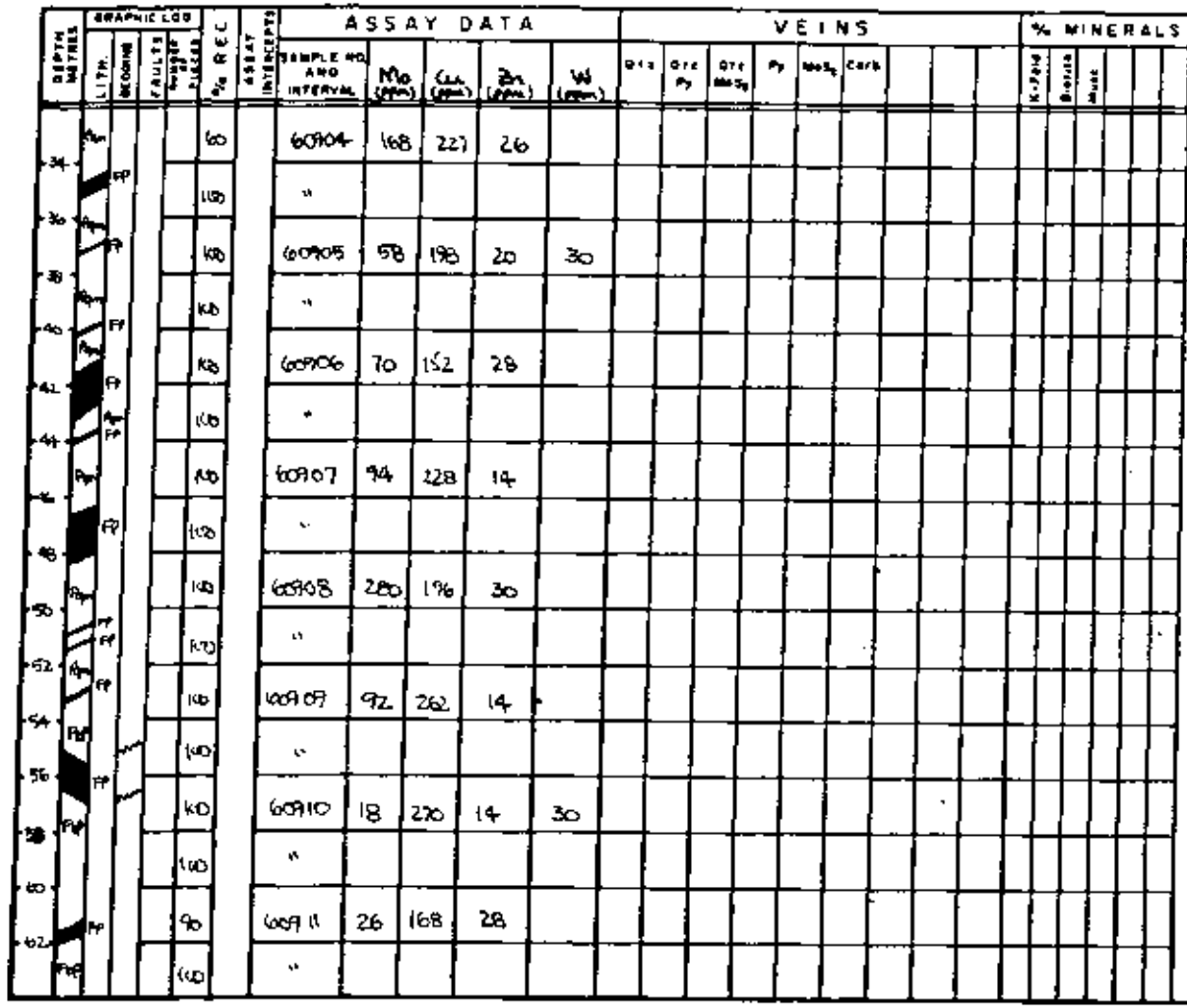
0 - 19.5 overburden

19.5 - 28 medium grained porphyritic quartz monzonite (Pqm) - contains numerous quartz veins and trace amounts of molybdenite
- numerous black feldspar porphyry (FP) and dark grey feldspar biotite porphyry dykes (FDP)

AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

DDH EC 79-1
SHEET 2 OF 15



DEPTH METRES	GRAPHIC LOG LITH.	GRAPHIC LOG MINERAL	GRAPHIC LOG FAULTS	GRAPHIC LOG SHEAR ZONES	% REC.	ASSAY INTERCEPTS	ASSAY DATA SAMPLE NO. AND INTERVAL	Mo (ppm)	Cu (ppm)	Zn (ppm)	W (ppm)	VEINS Qtz	Qtz Py	Qtz Mo S2	Py	Mo S2	Carb	% MINERALS K-Feld	Biotite	Musc	NOTES
34	Aplite				60		60904	168	227	26											
	FP				100		"														
36	Aplite				98		60905	98	198	20	30										
38	FP				100		"														
40	FP				98		60906	70	152	28											
42	FP				100		"														
44	Aplite				96		60907	94	228	14											
46	FP				100		"														
48	FP				100		60908	280	1%	30											
50	FP				100		"														
52	FP				100		60909	92	262	14											
54	FP				100		"														
56	FP				100		60910	18	270	14	30										
58	FP				100		"														
60	FP				96		60911	26	168	28											
62	FP				100		"														

AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

DDH EC 79-1
SHEET 3 OF 15

DEPTH METRES	GRAPHIC LOG: LITH.	GRAPHIC LOG: MINERAL	GRAPHIC LOG: FAULTS	GRAPHIC LOG: WIDTH OF SAMPLE	% REC	ASSAY INTERCEPTS	ASSAY DATA: SAMPLE NO AND INTERVAL	Mo (ppm)	Cu (ppm)	Zn (ppm)	W (ppm)	VEINS	% MINERALS
66	Pqfp				95		609112	104	283	36			
68					100		"						
70	hi silica				100		609113	500	76	18			
72					100		"						
74					100		609114	10	80	26			
76					100		"	1					
78					100		609115	6	24	48	5		
80					100		"						
82	QUARTZ FELDSPAR PORPHYRY				100		609116	4	6	18			
84					100		"						
86					100		609117	4	6	18			
88					100		"						
90					100		609118	4	8	18			
92					100		"						
94					100		609119	4	10	6			
					100		"						

NOTES

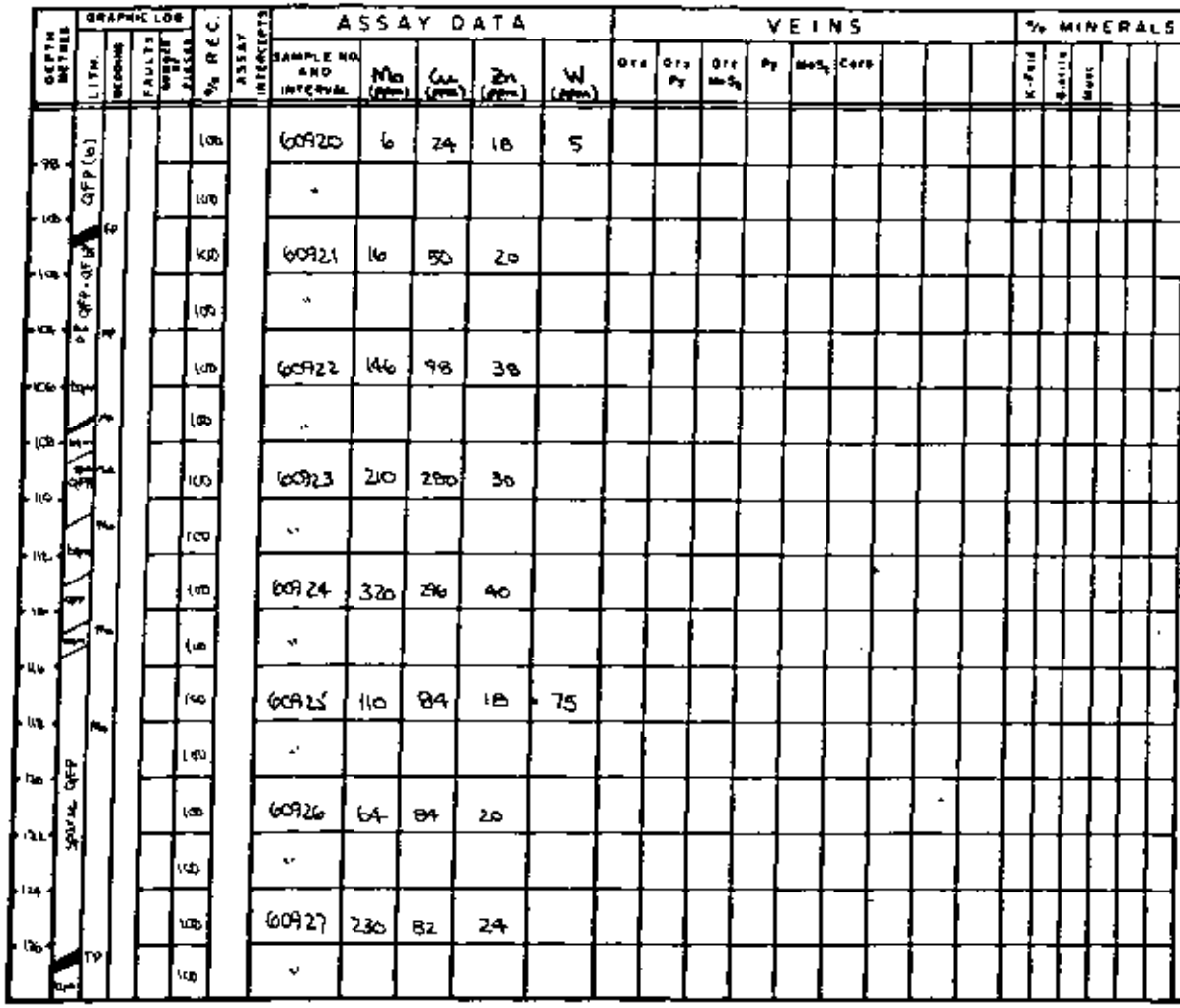
68 - 70·3 >90% silica in high silica rock trace molybdenite

70·3 - 106·2 · light grey quartz feldspar porphyry (QFP) cut by FP dykes, massive fresh rock.

AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

DDH EC 79-1
SHEET 4 OF 12



SAMPLE NO. AND INTERVAL	Mo (ppm)	Cu (ppm)	Zn (ppm)	W (ppm)
60920	6	24	18	5
"				
60921	16	50	20	
"				
60922	146	98	38	
"				
60923	210	280	30	
"				
60924	320	296	40	
"				
60925	110	84	18	75
"				
60926	64	84	20	
"				
60927	230	82	24	
"				

NOTES

106·2 - 115·5 microfractured biotite quartz monzonite (bqm) and porphyritic biotite quartz monzonite (Pbqm) MoS_2 on fractures bqm cut by dykes of QFP.

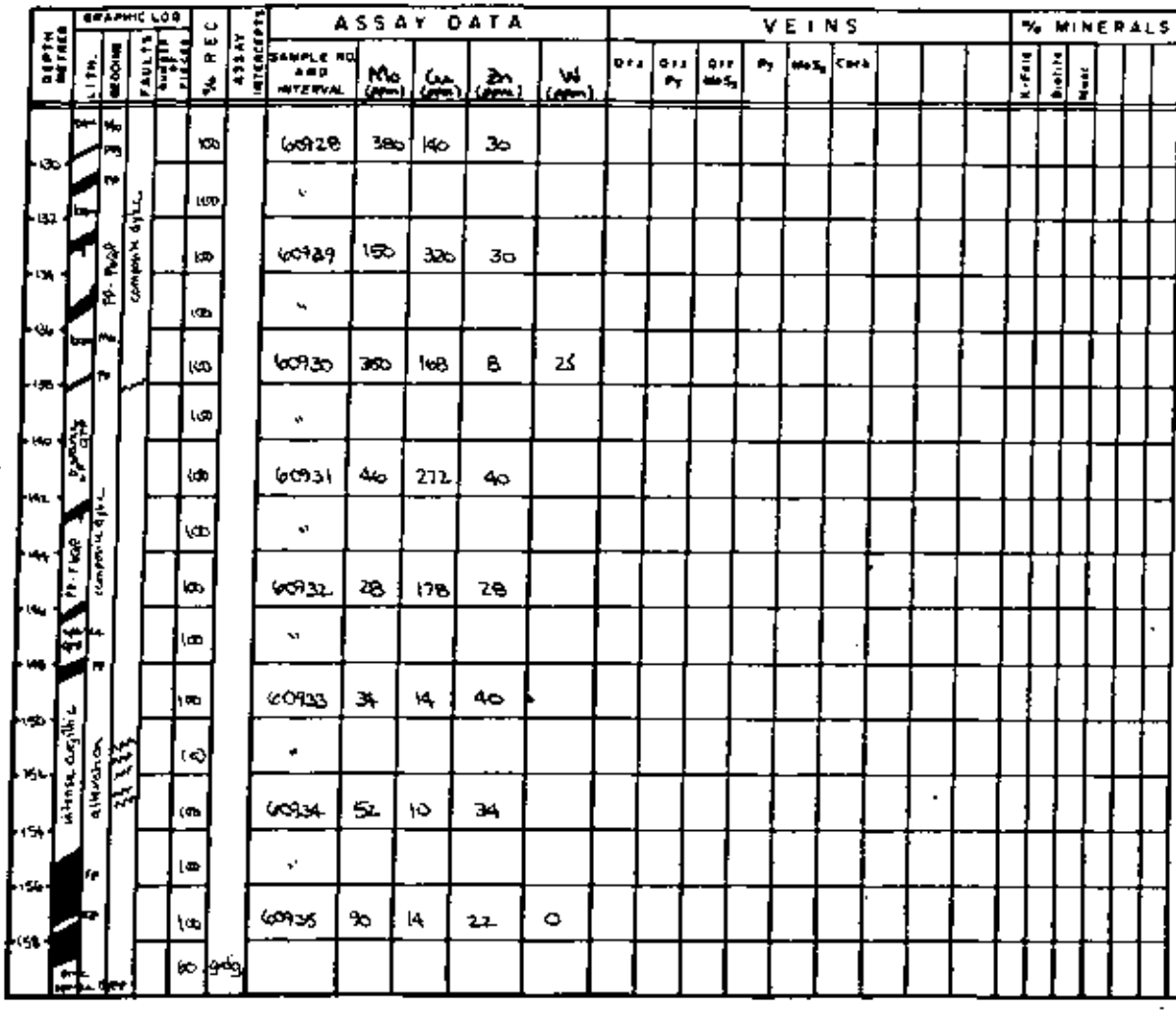
115·5 - 126·8 : sparse quartz feldspar porphyry (QFP)

126·8 - 138 : microfractured bqm, trace MoS_2 on fractures and with pegmatite cut by FP dykes and composite FP - FbQP dykes.

AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

DDH EC 79-1
SHEET 5 OF 15



NOTES

138 - 150·5 pink sparse QFP cut by composite dykes -

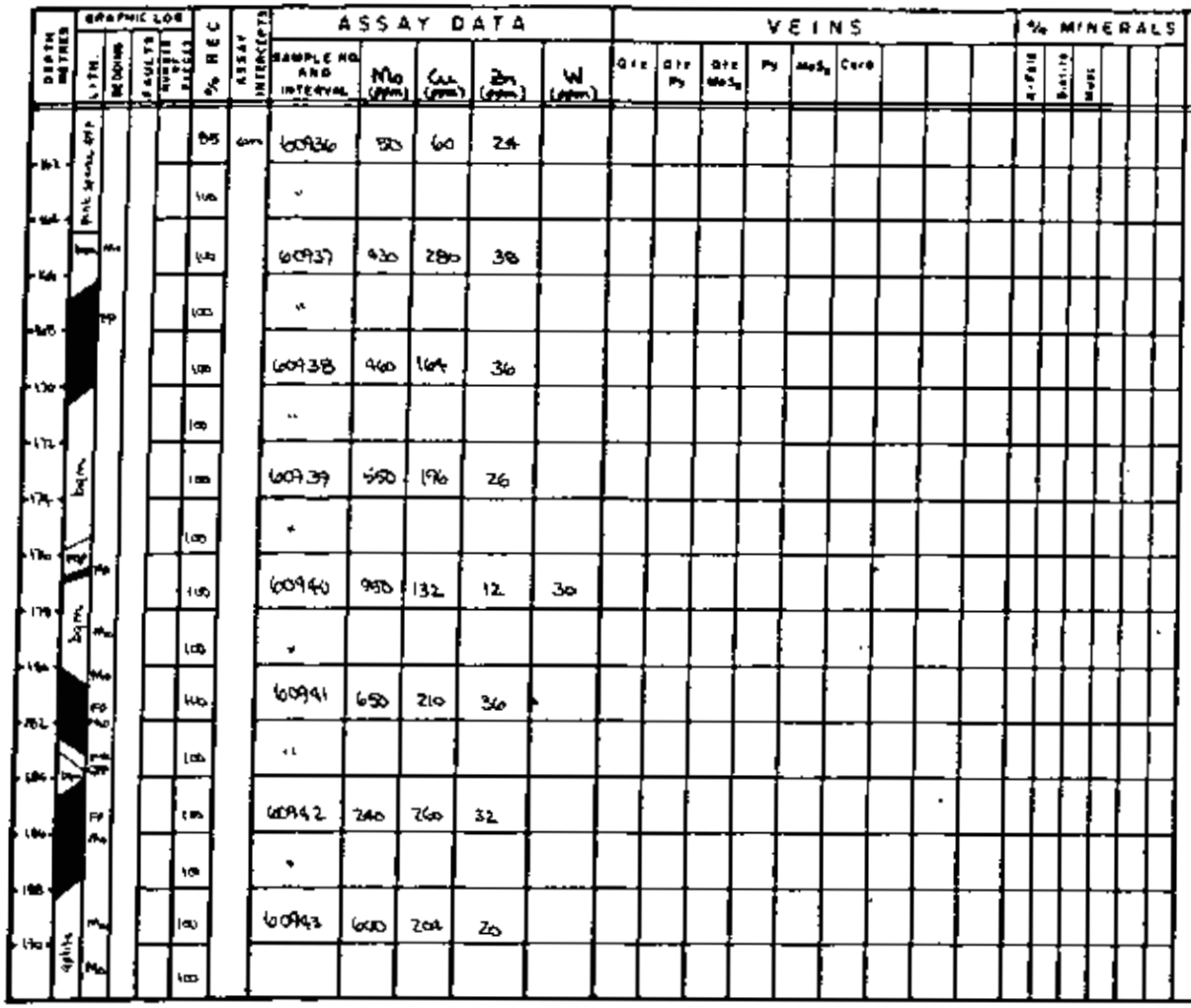
150·5 - 152·4 intensely argillized rock, no original rock texture remains -

152·4 - 160·8 pink sparse QFP cut by numerous composite dykes

AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

DDH EC 79-1
SHEET 16 OF 35



SAMPLE NO AND INTERVAL	Mo (ppm)	Cu (ppm)	Zn (ppm)	W (ppm)
609936	520	60	24	
"				
609937	430	280	38	
"				
609938	460	164	36	
"				
609939	550	196	26	
"				
609940	990	132	12	30
"				
609941	650	210	36	
"				
609942	240	760	32	
"				
609943	600	204	20	

NOTES

100.8 - 188.4 microfractured bqm and porphyritic bqm cut by sparse QFP dykes and FP dykes - MoS2 on fractures in bqm

188.4 - 452.3 white aplite to bqm with MoS2 on fractures and quartz veins.

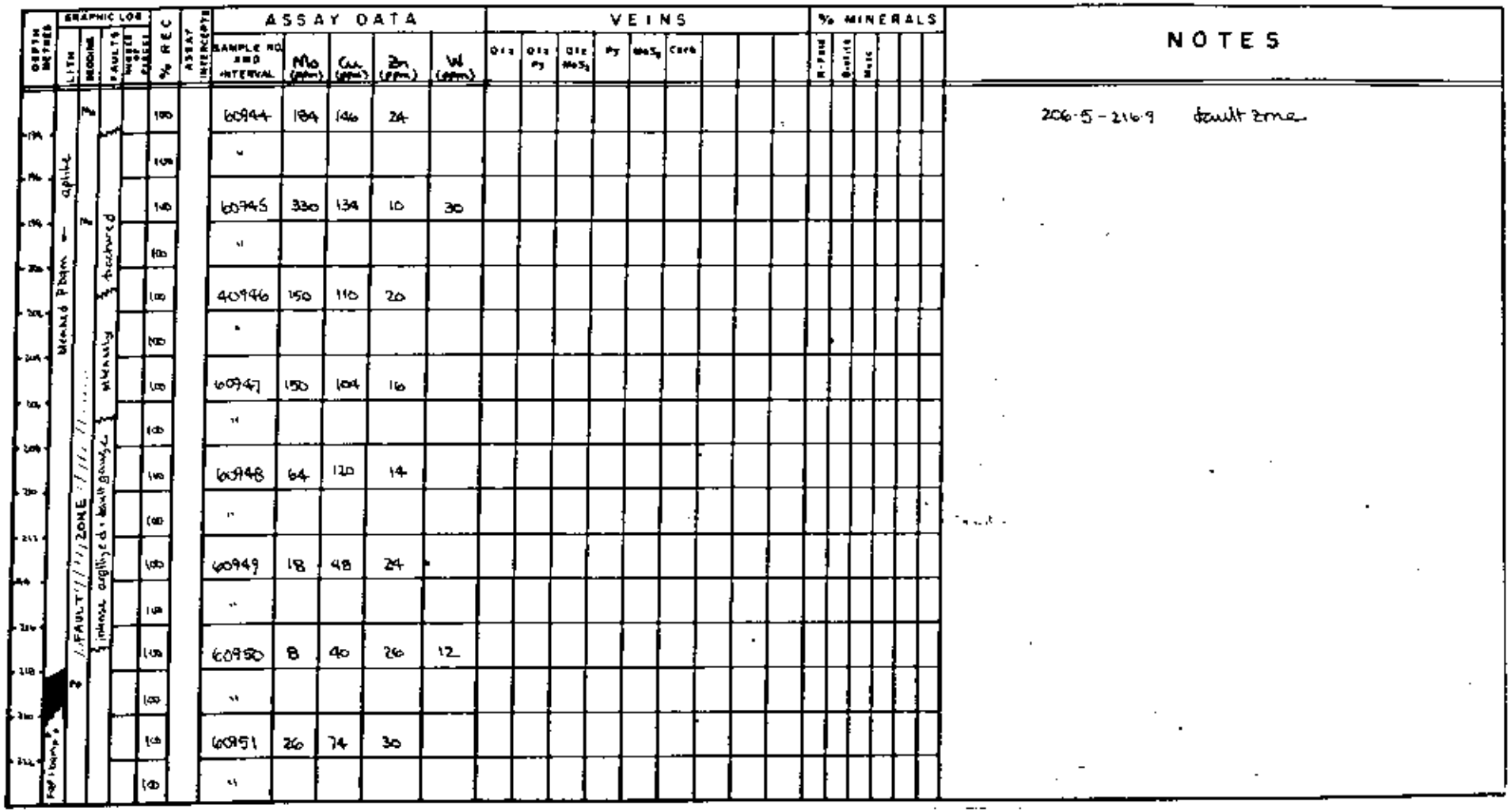
206.5 - 216.9 fault zone - intense argillic alteration

aplite varies downhole from bqm to PbQm to pink granite and is weakly mineralized with molybdenite, chalcopyrite and trace amounts of scheelite.

AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

DDH 86-19-1
SHEET 11 OF 15.

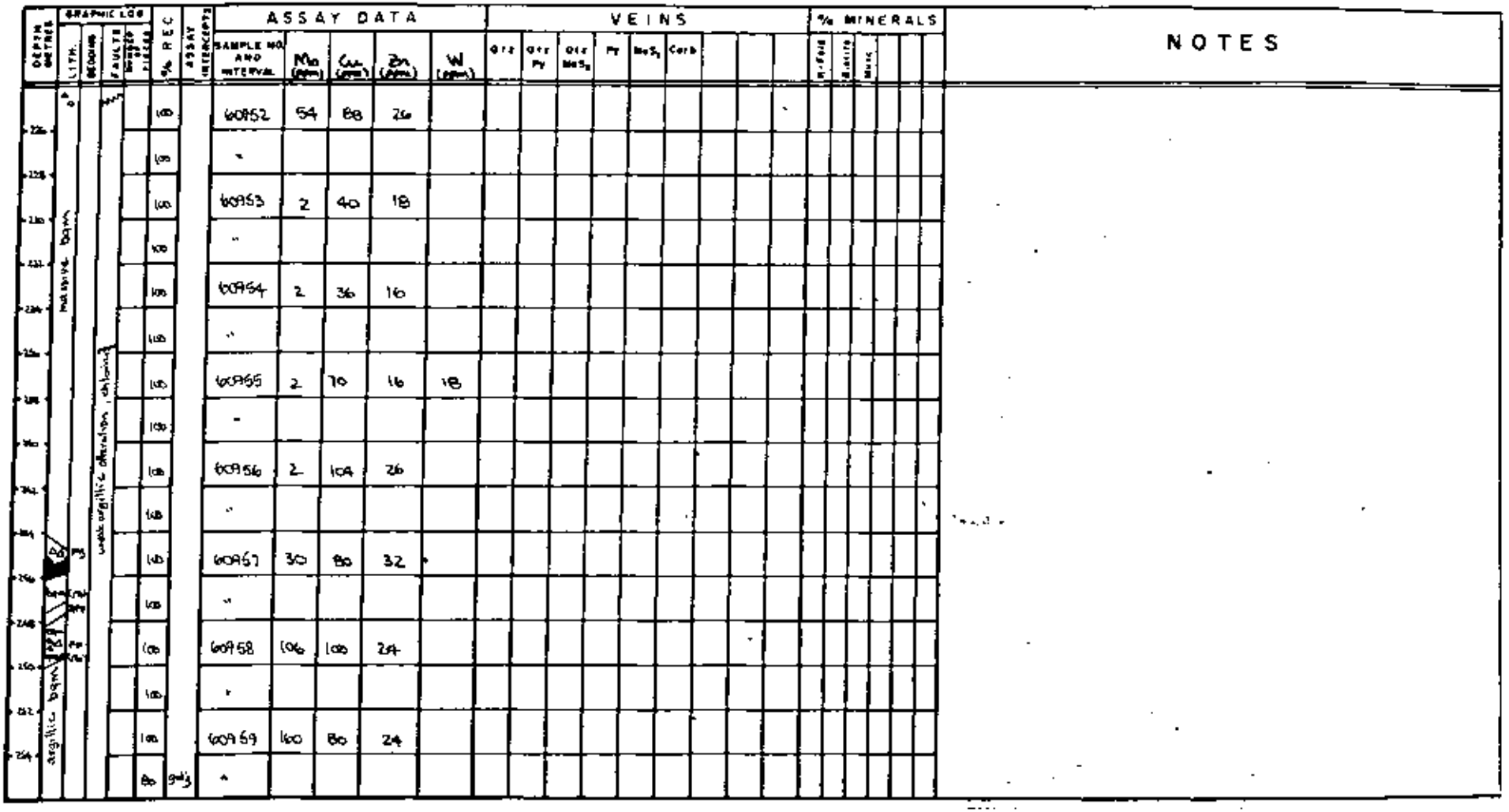


DEPTH METRES	GRAPHIC LOG LITH	MINERAL	FAULTS	% REC	ASSAY INTERCEPTS	SAMPLE NO AND INTERVAL	Mo (ppm)	Cu (ppm)	Zn (ppm)	W (ppm)	VEINS	% MINERALS	NOTES
						60944	184	146	24				206-5 - 216-9 fault zone
						"							
						60945	330	134	10	30			
						"							
						40946	150	110	20				
						"							
						60947	150	104	16				
						"							
						60948	64	120	14				
						"							
						60949	18	48	24				
						"							
						60950	8	40	26	12			
						"							
						60951	26	74	30				
						"							

AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

DDH EC 79-1
SHEET 8 OF 15



DEPTH METRES	GRAPHIC LOG: LITH.	GRAPHIC LOG: SEDIMS	GRAPHIC LOG: FAULTS	% REC	ASSAY INTERCEPTS	ASSAY DATA: SAMPLE NO AND INTERVAL	Mo (ppm)	Cu (ppm)	Zn (ppm)	W (ppm)	VEINS: Qtz	Qtz Py	Qtz MoS_2	Py	MoS_2	Carb	% MINERALS: K-Feld	Biotite	Musc	NOTES
226				100		60952	54	88	26											
228				100		"														
230				100		60953	2	40	18											
232				100		"														
234				100		60954	2	36	16											
236				100		"														
238				100		60955	2	70	16	18										
240				100		"														
242				100		60956	2	104	26											
244				100		"														
246				100		60957	30	80	32											
248				100		"														
250				100		60958	106	100	24											
252				100		"														
254				100		60959	160	80	24											
				80	9m's	"														

AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

DDH EC 79-1
SHEET 9 OF 15

DEPTH METRES	GRAPHIC LOG: LITH	GRAPHIC LOG: BEDDING	GRAPHIC LOG: FAULTS	GRAPHIC LOG: MODE OF OCCURS	% REC.	ASSAY INTERCEPTS	ASSAY DATA: SAMPLE NO AND INTERVAL	Mo (ppm)	Cu (ppm)	Zn (ppm)	W (ppm)	VEINS	% MINERALS
250	bqm				100		60960	144	74	160	90		
260					100		"						
270					100		60961	194	108	20			
280					100		"						
290					100		60962	110	110	20			
300					100		"						
310					90		60963	110	88	20			
320					100		"						
330					87		60964	92	90	18			
340					100		"						
350					100		60965	132	76	14	135		
360					100		"						
370					100		60966	110	450	20			
380					100		"						
390	FP				100		60967	80	410	74			
400	FP				100		"						

NOTES

261.9 20 mm wide chalcopyrite, pyrite vein

268.7 reduce NQ to BQ coring

AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

DDH EC 79-1
SHEET 10 OF 15

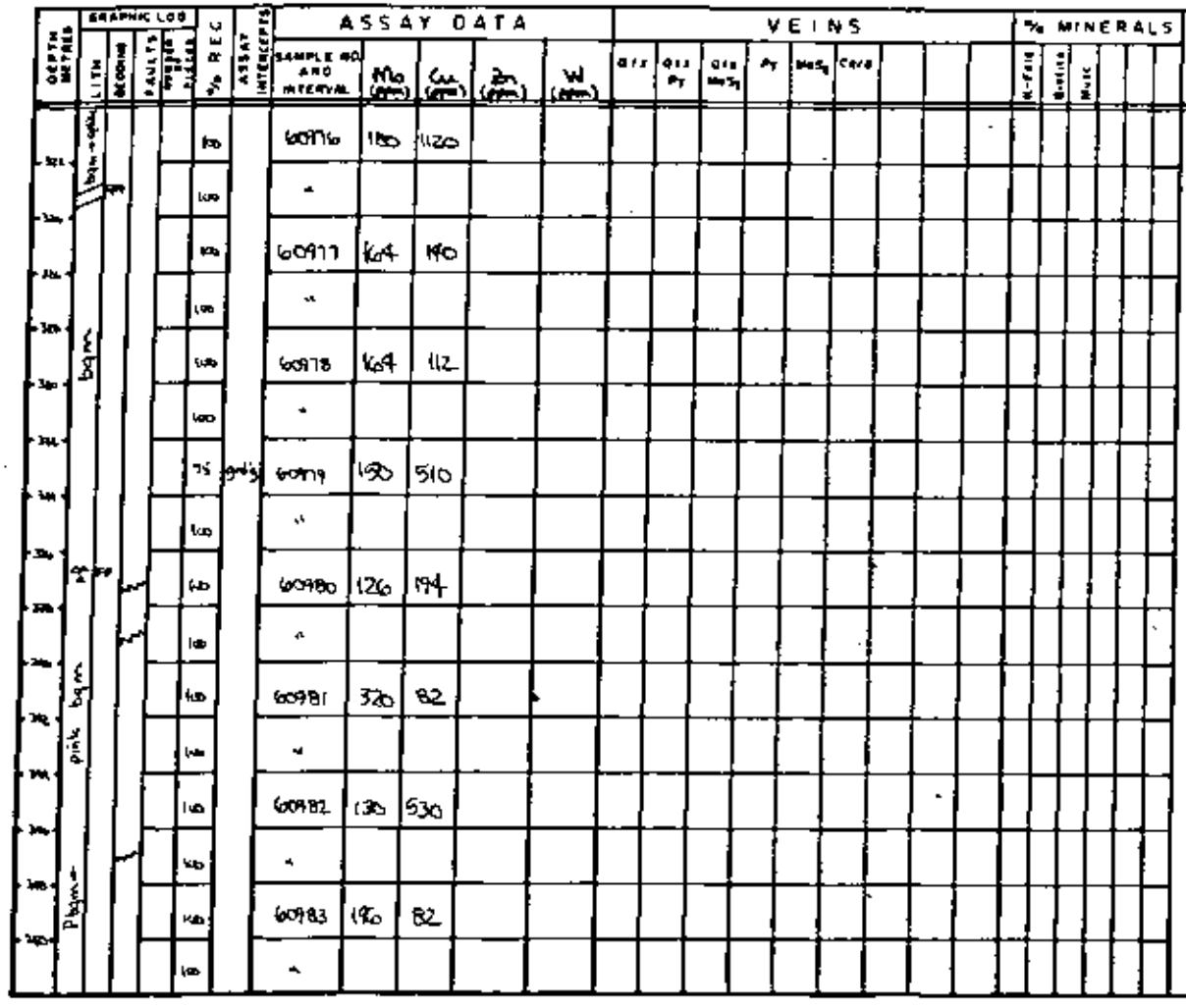
DEPTH METRES	GRAPHIC LOG: LITH	GRAPHIC LOG: BEDDING	GRAPHIC LOG: FAULTS	% REC	ASSAY INTERCEPTS	ASSAY DATA: SAMPLE NO AND INTERVAL	Mo (ppm)	Cu (ppm)	Zn (ppm)	W (ppm)	VEINS	% MINERALS	NOTES
280	bqm			100		60968	116	122	26				
						"							
290				100		60969	190	128	20				
						"							
300				100		60970	200	228	20	75			
						"							
310				100		60971	90	240	280				
						"							
320				100		60972	130	126	24				
						"							
330				100		60973	200	110	12				
						"							
340				100		60974	280	316					
						"							
350				100		60975	180	208					
360				100		"							

311 - 312.6 brown FP dyke (?) with molybdenite, chalcopyrite, scheelite on fractures and in quartz veins.

AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

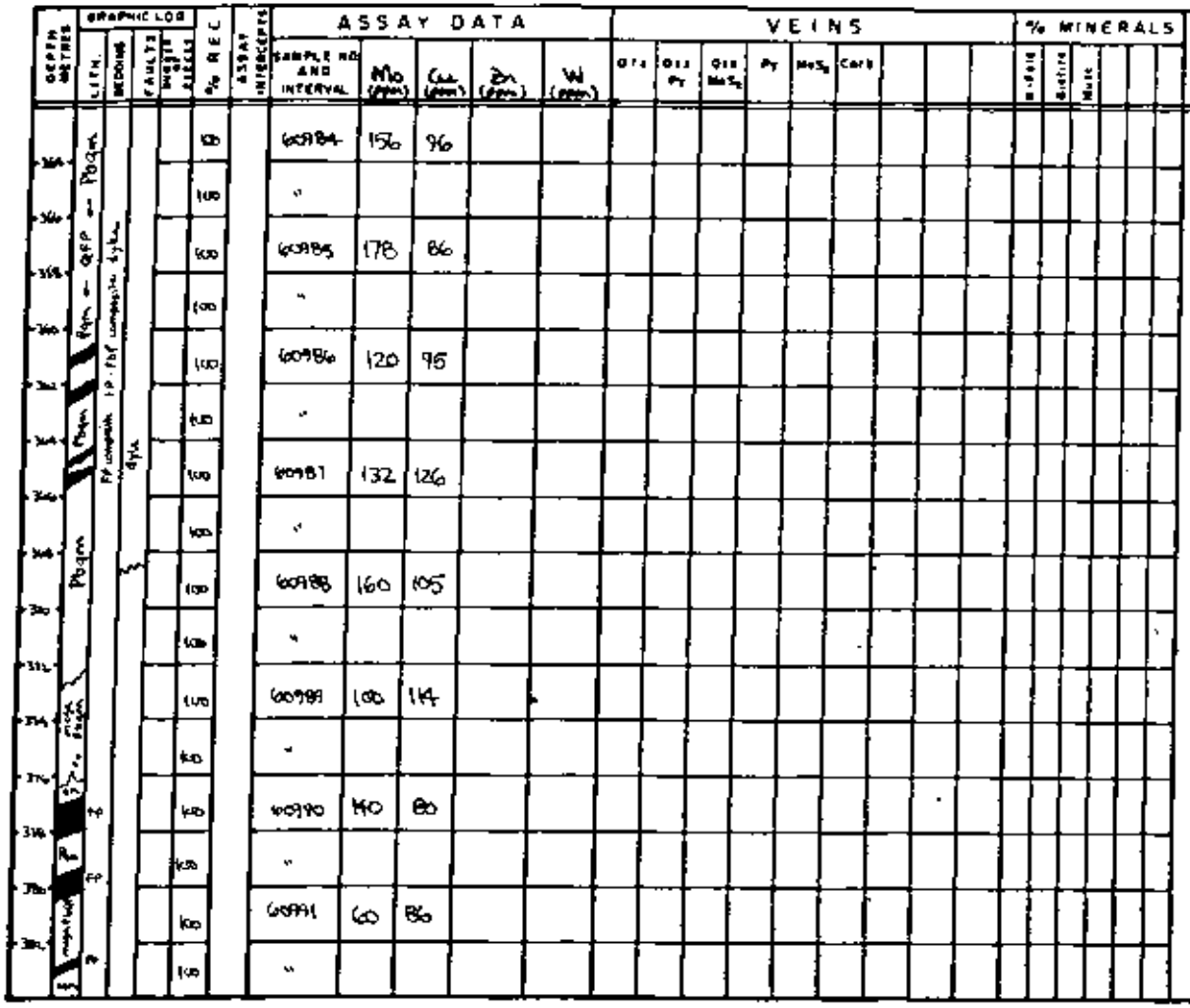
DDH EC 79-1
SHEET 11 OF 15



AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

DDH EC 79-1
SHEET 12 OF 16

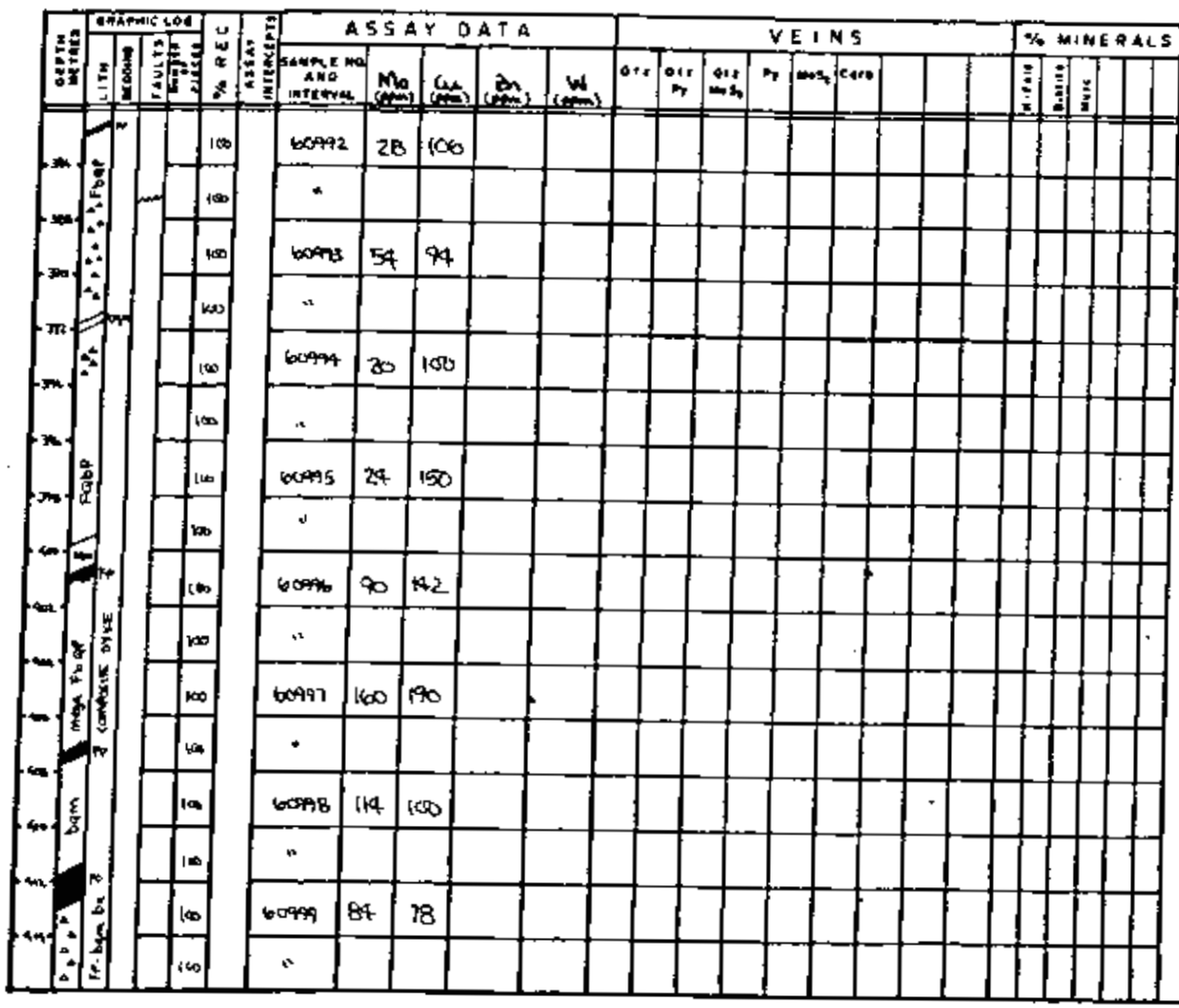


372.5 - 407.7 fine to medium grained Fb 'mega porphyry' - large white feldspar phenocrysts to 1.5 cm long. dyke(?) with black FP chill margins cuts Pbqm

AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

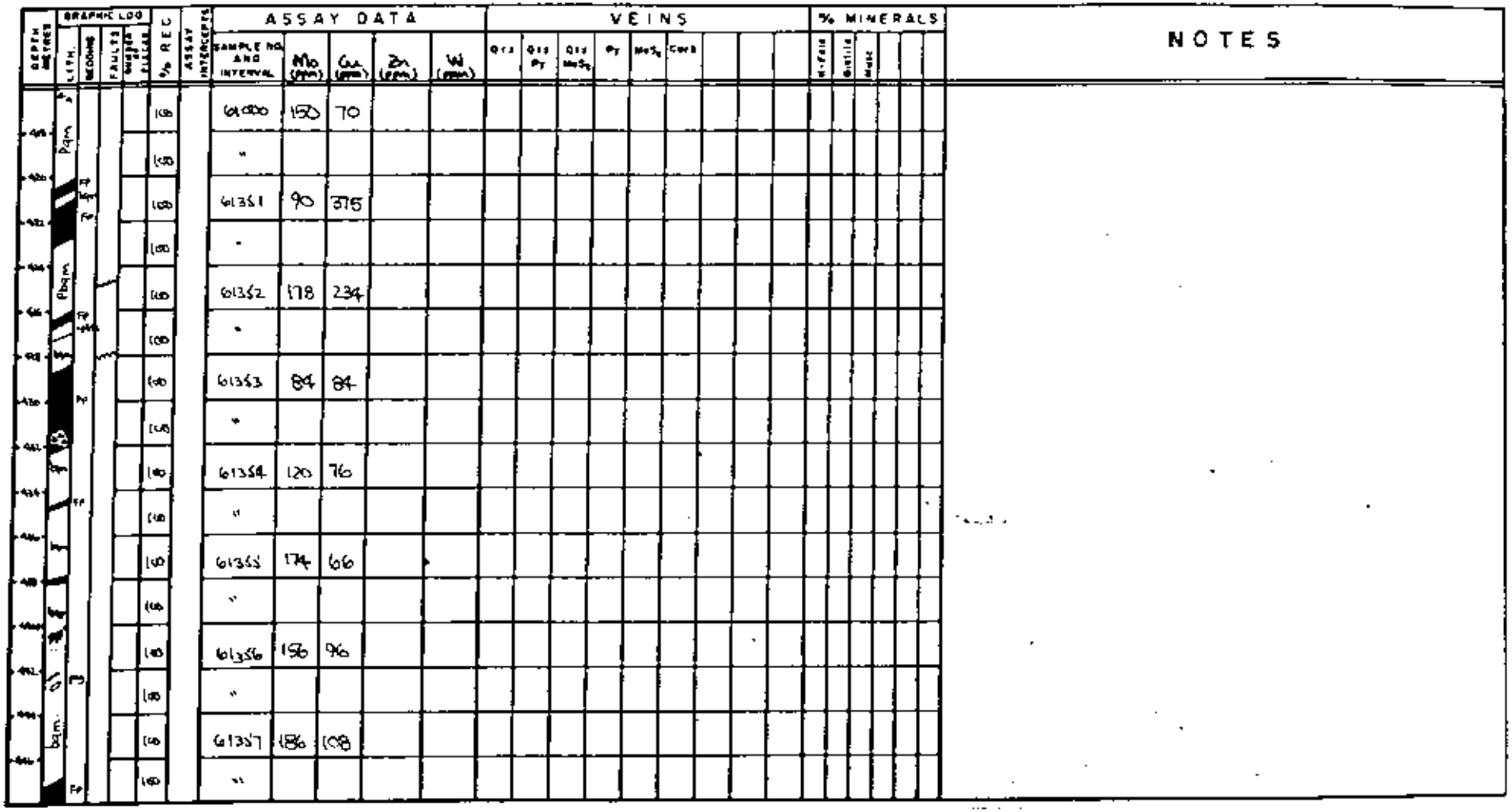
DDH EC 79-1
SHEET 13 OF 15



AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

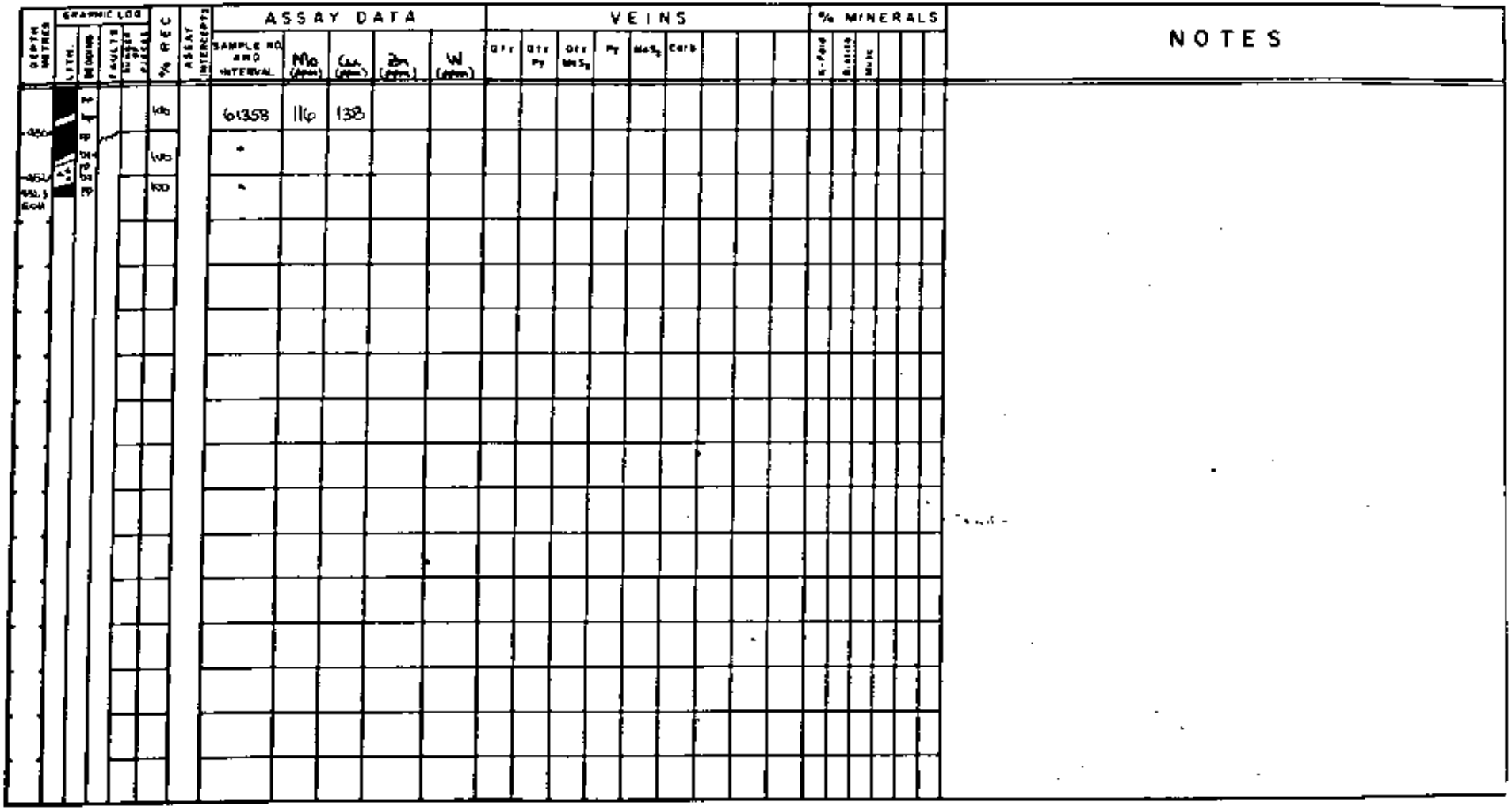
DDH EC 79-1
SHEET 14 OF 15



AMAX MINERALS EXPLORATION

ERIE CREEK PROPERTY

DDH EC 79-1
SHEET 15 OF 15



APPENDIX III

Kossbacher Laboratory

GEOCHEMICAL ANALYSTS & ASSAYERS

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

CERTIFICATE NO. 7453-1

INVOICE NO.

DATE ANALYSED Dec. 1979

PROJECT ERIE CREEK 794

CERTIFICATE OF ANALYSIS

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

No.	Sample	Sn ppm	Mo	Cu	Ni	Co	Mn	Fe	Ag	Zn	Pb	W	As	No.
01	60901		200	400	22	24	200	2.9	.2	26	6			01
02	902		190	186	24	22	240	2.6	.2	28	10			02
03	903		134	146	90	20	400	3.3	.2	34	8			03
04	904		168	227	22	22	260	2.8	.2	26	8			04
05	905		58	198	18	20	200	2.1	.2	20	8	30		05
06	906		70	152	24	24	280	3.0	.2	28	12			06
07	907		94	228	20	24	220	2.7	.2	28	14			07
08	908		>280	196	20	20	240	2.7	.2	30	16			08
09	909		92	262	22	26	240	2.8	.2	24	14			09
10	910	5	18	270	26	28	300	3.0	.2	34	14	30		10
11	911		26	168	20	24	260	2.5	.2	28	12		10	11
12	912		164	287	26	22	320	2.7	.2	36	8			12
13	913		>500	78	18	16	160	1.3	.2	18	8			13
14	914		10	50	20	26	240	1.8	.2	26	24			14
15	915		6	24	90	26	660	3.0	.2	48	14	5		15
16	916		4	6	18	20	320	1.7	.2	18	10			16
17	917		4	6	16	20	350	1.8	.2	18	10			17
18	918		4	8	16	20	340	2.0	.2	18	6			18
19	60919		4	10	18	24	300	2.0	.2	18	6			19
20	STD C		4	74	40	14	300	3.4	.2	156	12			20
21	60920	2	6	24	16	20	240	1.8	.2	18	14	5	10	21
22	921		16	50	16	24	280	2.0	.4	20	14			22
23	922		146	98	18	22	480	3.2	.2	38	2			23
24	923		210	280	14	18	260	1.7	.4	30	10			24
25	924		>320	296	16	20	300	2.0	.8	40	8			25
26	925		110	84	14	20	200	1.5	.2	18	6	15		26
27	926		64	84	16	20	180	1.5	.2	20	6			27
28	927		>230	82	16	16	240	2.0	.2	24	4			28
29	928		>380	140	20	20	300	2.0	.2	30	8			29
30	929		150	320	24	20	260	2.3	.2	30	4			30
31	930	0	>350	168	16	20	300	2.0	.4	30	8	25	10	31
32	931		46	272	28	24	400	2.8	.8	40	4			32
33	932		28	178	18	22	360	2.2	.2	28	4			33
34	933		34	14	20	24	580	2.6	.2	40	6			34
35	934		52	10	18	18	460	2.3	.2	34	6			35
36	935		90	14	16	20	480	2.4	.2	36	22	0		36
37	936		56	60	14	16	180	1.3	.2	24	8			37
38	937		>430	240	28	16	340	2.6	.2	38	2			38
39	60938		>460	164	20	20	360	2.4	.2	36	2			39
40	STD C		4	80	42	16	320	3.2	.2	154	14			40

Certified by P. Kossbacher

Kossbacher Laboratory

GEOCHEMICAL ANALYSTS & ASSAYERS

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

CERTIFICATE NO. 9453-2

INVOICE NO.

DATE ANALYSED Dec 1979

PROJECT ERIE CREEK 794

CERTIFICATE OF ANALYSIS

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

No.	Sample	Sn ppm	Mo	Cu	Pb	Co	Mn	Fe	Ag	Zn	Ni	W	Au	No.
01	60939		550	196	14	14	230	1.8	.4	26	10			01
02	940	0	950	132	12	12	200	1.4	.4	24	12	30	10	02
03	941		650	210	18	18	360	2.6	.2	36	8	"		03
04	942		240	260	22	20	440	3.2	.2	52	2			04
05	943		600	204	12	14	180	1.3	.2	20	8			05
06	944		184	146	16	14	240	1.6	.2	24	8			06
07	945		330	134	14	14	180	1.4	.2	20	10	30		07
08	946		150	110	16	14	240	1.6	.2	20	10			08
09	947		150	104	12	14	140	1.4	.2	16	12			09
10	60948		64	120	10	12	80	1.3	.2	14	12	"		10
11	749		18	48	14	16	360	2.5	.2	24	10			11
12	950	2	8	40	14	22	460	3.7	.2	26	6	12	10	12
13	951		26	34	24	24	440	3.5	.2	30	4			13
14	952		54	94	16	20	340	2.4	.2	26	6			14
15	953		2	40	14	18	200	1.8	.2	18	12			15
16	954		2	36	14	16	200	1.9	.2	16	10			16
17	955		2	70	14	16	180	1.6	.2	16	8	18		17
18	956		2	104	12	14	220	1.6	.4	26	24			18
19	60957		30	80	22	22	400	3.5	.2	32	2			19
20	STD E		4	76	44	16	300	3.2	.2	154	12	"		20
21	60958		106	100	20	20	280	2.6	.2	24	4	"		21
22	959		160	80	16	16	340	2.0	.2	24	10	"		22
23	960	0	144	74	14	16	180	1.8	.2	16	8	90	10	23
24	961		144	108	16	20	340	2.5	.2	20	6			24
25	962		110	110	16	16	240	1.8	.2	20	6			25
26	963		110	88	16	18	240	1.6	.2	20	6			26
27	964		92	90	12	18	240	2.0	.2	18	6			27
28	965		132	76	14	18	200	1.8	.2	14	12	135		28
29	966		110	450	14	16	180	2.0	.4	20	6	"		29
30	967		80	410	22	30	640	2.4	.6	74	20			30
31	968		116	122	18	20	260	2.2	.2	26	6			31
32	969		190	128	20	18	240	1.8	.2	20	2			32
33	970	2	200	228	14	18	160	2.4	.2	20	6	75	10	33
34	971		90	240	22	20	280	2.0	.2	28	2			34
35	972		130	126	20	16	260	2.0	.2	24	2			35
36	60973		200	110	26	22	440	2.8	.2	40	12			36
37	STD E		4	80	44	16	340	3.2	.2	152	14	"		37
38														38
39														39
40														40

Certified by F. Kossbacher

Kossbacher Laboratory

GEOCHEMICAL ANALYSTS & ASSAYERS

AMAX
JAN 28 1980
VANCOUVER OFFICE

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

CERTIFICATE NO. 80018-1

INVOICE NO.

DATE ANALYSED JAN. 1980

PROJECT ERIC CR. 794

CERTIFICATE OF ANALYSIS

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

(WORKSHEET)

No.	Sample	pH	Mo	Cu				Ag						No.
01	60974		260	316				1.6						01
02	975		180	208				0.8						02
03	976		180	1120				4.2						03
04	977		164	140				0.8						04
05	978		164	112				0.6						05
06	979	J	150	510				1.4						06
07	60980		126	194				0.4						07
08	981		320	82				0.2						08
09	982		130	530				0.2						09
10	983		196	82				0.2						10
11	984	J	156	96				0.2						11
12	985		178	86				0.2						12
13	986		120	95				0.2						13
14	987		132	126				0.2						14
15	988		160	105				0.2						15
16	989	J	100	114				0.2						16
17	60990		140	80				0.2						17
18	991		60	86				0.2						18
19	992		28	106				0.2						19
20	993		54	94				0.2						20
21	994	J	20	100				0.2						21
22	995		24	150				0.4						22
23	996		90	142				0.2						23
24	997		160	190				0.6						24
25	998		114	100				0.4						25
26	999	J	84	78				0.2						26
27	61000		150	70				0.2						27
28	~~61000~~													28
29	61351		90	375				1.4						29
30	352		178	234				1.0						30
31	353		84	84				0.2						31
32	354	J	120	76				0.2						32
33	355		174	66				0.2						33
34	356		156	96				0.2						34
35	357		186	108				0.2						35
36	61358	J	116	138				0.2						36
37														37
38														38
39														39
40														40

Certified by _____

Procedures for Collection and Processing of Geochemical Samples

Analytical Methods for Ag, Mo, Cu, Pb, Zn, Fe, Mn, Ni, Co and V in sediments and soils; Mo, Cu, Zn, Na and SO_4^{--} in waters.

Amax Exploration, Inc.
Vancouver Office.

September 1979

Sample Collection

Soils

B Horizon material is sampled and thus organic rich topsoil and leached upper subsoil are avoided. Occasionally organic rich samples have to be taken in swampy depressions.

Samples are taken by hand from a small excavation made with a cast iron mattock. Approximately 200 gms of finer grained material is taken and placed in a numbered, high wet-strength, Kraft paper bag. The bags are closed by folding and do not have metal tabs.

Observations as to the nature of the sample and the environment of the sample site are made in the field.

Drainage Sediments

Active sediments are taken by hand from tributary drainages which are generally of five square miles catchment or less. Composite samples are taken of the finest material available from as near as possible to the centre of the drainage channel thus avoiding collapsed banks. More than one sample is taken if marked mineralogical or textural segregation of the sediments is evident.

Some 200 gm of finer material is collected unless the sediment is unusually coarse in which case the weight is increased to 1 kg. Samples are placed in the same type of Kraft paper bag as are employed in soil sampling. Water samples are taken at all appropriate sites. Approximately 1/2 pint are sampled and placed in a clean, screw sealed, polythene bottle. Observations are made at each site regarding the colours and nature of the sample.

Kossbacher Laboratory

GEOCHEMICAL ANALYSTS & ASSAYERS

[illegible]
CANADA
TELEPHONE [illegible]
AREA CODE [illegible]

April 30, 1974

SUMMARY OF SOME ANALYTICAL TECHNIQUES CURRENTLY IN USE AT KOSSBACHER 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

3. Rocks

[illegible] consists of some [illegible] small fragments broken from any exposed 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. Where samples are appreciably heavier than 2 kg 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 (100 x 16 mm) 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-O-Gram 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 85% perchloric acids. Racks of tubes are then placed on an electrical hot plate, brought to a gentle boil ($\frac{1}{2}$ hour) and digested for $4\frac{1}{2}$ 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, Zn, Ag, Fe, Mn, Ni and Co determination by a Perkin-Elmer 290B 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

Calibration

1. Set 1 gamma/ml to read 40 equivalent to 20 gamma/gm

   Factor $\frac{1}{2}$ x meter reading

   Check standards

   4, 10, 20, 40 ppm Ag in sample

2. Set 15 gamma/ml to 100 equivalent to 100 ppm

   Check standards

   40, 100 ppm

   Factor directly in ppm Ag

3. Rotate burner to maximum angle

   Set 10.0 gamma/ml Ag to read 100

   Check standards

   100,200,400,1000 ppm Ag

   Factor 10x scale reading

4. Samples higher than 1000 ppm should be re-analyzed by assay procedure

5. Background correction for sample reading between 1 to 5 ppm

   Calibrate AA in step 1

   Dial wavelength to 300 (peak)

   Read the samples again

   Subtract the background reading from the first reading

Standards

1. 1000 gamma/ml Ag - 0.720 gm Ag_2SO_4 dissolved in 20 mls $Hx10_3$ and dilute to 500 mls

2. 100 gamma/ml Ag - 10 mls of above + 20 mls $HClO_4$, dilute to 100 mls

3. Recovery spiked standard

   5 gamma/ml Ag - 5 mls 100 gamma/ml dilute to 100 mls with "mixed" acid

Working AA Standards

Pipette .2, .5, 1, 2, 5, 10 mls of 100 gamma/ml and 2, 5 mls 1.000 gamma/ml dilute to 100 mls with 20% $HClO_4$. This equivalent to 4, 10, 20, 40, 100, 200, 400, and 1000 ppm Ag in the sample .50 gm diluted to 10 mls.

Recovery Standard

Pipette 2 mls of 5 gamma/ml Ag in mix acids into a sample and carry through the digestion. This should give a reading of 20 ppm Ag + original sample content.

Follow the general geochemical procedure for sample preparation and digestion.

For low assay Ag, the same procedure is used. Ag is then calculated in oz/ton.

1 ppm = .0292 oz/ton

conversion factor

oz/ton = .0292 x ppm Ag

Zn Geochemical AA Setting

Lamp Zn

Current 3 #3 Slit 20A

Wave length 2138 Dial 64.9

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 H_2O, HCl, HNO_3, $HClO_4$, fumed to $HClO_4$ - make up to 100 mls H_2O

1000, 100 gamma/ml and 100 ml by dilution in 20 % $HClO_4$

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% $HClO_4$ 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, HNO_3 and fumed into $HClO_4$, dilute to 1 liter

Pipette

1, 2, 10, 20 mls into 100 ml vol flasks diluted to mark with 20% $HClO_4$

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

Ni, Co, Mn, Cr AA Setting

Lamp Multi element Cu, Ni, Co, Mn Cr

Current 10 #4 Slit 7A

Wave length 4030.8 Dial 425.2

Fuel - Acetylene Flow 14.0

Oxidant - Air Flow 14.0

Burner - P.E. short path (or AB 50)

Range

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

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

Burner 90°

0 - 1000 gamma/ml Factor 200x - 0 to 20,000 ppm

0 - 2000 gamma/ml Factor 400x - 0 to 40,000 ppm

EDTA Extraction - use AB 51 in line

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

Standards

Fisher 10,000 gamma/ml (ml)

10x Dilution 1000 gamma/ml

Pippette

.5, 1, 2, 3, 5, 8, 10, ml of 1000 gamma/ml

2, 3, 5, 8, 10, 15, 20 ml of 10,000 gamma/ml dilute to 100 mls with 20% $HClO_4$. This gives

5, 10, 20, 30, 50, 80, 100, 200, 300, 500, 800, 1000, 1500, 2000 gamma/ml

Mn Graphitized AA Setting

Lamp ASL H/C Mo

Current 5 #5 Slit 7A

Wavelength 3133 Dial 260.2

Fuel - Acetylene Flow 12.0 to give 1" red feather

Oxidant - Nitrous oxide Flow 14.0

Burner - AB 50 in line

Caution read the operation using N_2O and acetylene flame at end of general AA procedure

Range

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

Rotate burner to max. angle

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

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

Standards 1000 gamma/ml

Dissolve .750 gms MoO_3 (acid molybdic) with 20 mls H_2O, 6 lumps NaOH, when all dissolved, add 20 mls HCl, dilute to 500 mls

100 gamma/ml - 10 x dilution

Pipette

.2, .5, 1, 2, 3, 5, 8, 10 mls of 100 gamma/ml

2, 3, 5, 8, 10 mls of 1000 gamma/ml add 5 mls 10% $AlCl_3$ and dilute to 100 mls with 20% $HClO_4$

This gives

.2, .5, 1, 2, 3, 5, 8, 10, 20, 30, 50, 80, 100 gamma/ml Mo

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/ml

Weigh 5.000 gms iron wires, into beaker, add H_2O, HCl, HNO_3, $HClO_4$, heat to $HClO_4$ fumes. Add $HClO_4$ to 100 mls + 100 mls H_2O, warm, dilute to 500 mls

Pipette

1, 5, 10, 20, 30, 50, 80 mls 10,000 gamma/ml dilute to 100 mls with 20% $HClO_4$ 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

Fule - Acetylene Flow 14.0

Oxidant - Air Flow 14.0

Burner AB S1 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/ml

1.000 gm pure Ni metal dissolved in HCl, HNO_3, $HClO_4$ to perchloric fumes, dilute to 100 ml H_2O

1000 gamma/ml and 100 gamma/ml Successive 10x dilutions in 20% $HClO_4$

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 2% $HClO_4$. 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

Cu Geochemical AA Setting

Lamp Single Cu or

5 multi element

Current 10 for multi element #4 Slit 7A

4 for single #3 Slit 7A

Wavelength 3247 Dial 200

Burner Techtron AB 51 (For Cu in natural waters)

P.E. Short Path (For geochem)

Fuel Acetylene Flow 14

Oxidant Air Flow 14

Range

0 - 5 gamma/ml Factor 1x to 100 ppm (for low Cu)

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

Burner 90°

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

Wavelength 2492 Dial 147

Burner in line

Range

0 - 1000 gamma/ml Factor 200x to 20,000 ppm

0 - 2000 gamma/ml Factor 400x to 40,000 ppm

Higher range than 40,000 ppm requires 10x dilution

Standards

10,000 gamma/ml

1.000 gm metal powder, H_2O, HCl, HNO_3 until dissolved, add

$HClO_4$, fume dilute to 100 mls

1x10 gamma/ml 10x dilution above in 20% $HClO_4$

2000 gamma/ml 20 mls 10,000 gamma/ml - dilute to 100 mls in 20% $HClO_4$

100 gamma/ml 10x dilution 1000 gamma/ml dilute to 100 mls in 20% $HClO_4$

200 gamma/ml 10x dilution 2000 gamma/ml dilute to 100 mls in 20% $HClO_4$

Pipette

1, 2, 3, 5, 8, 10 mls 100 gamma/ml - dilute to 100 mls with 20% $HClO_4$ to give 1, 2, 3, 5, 8, 10 gamma/ml

Combined standards Cu, Ni, Co, Pb, Zn

1, 2, 5, 10, 20, 30, 50, 80, 100, 150, 200 gamma/ml

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 30. Factor 5x 0 to 150 ppm

0 - 200 gamma/ml to read 0 to 60. Factor 50x 0 to 3000 ppm

Standards - 10,000 gamma/ml

1.000 pure metal, dissolved in HNO_3, fumed to $HClO_4$ make up to 100 mls in 20% $HClO_4$

1000 gamma/ml and 100 gamma/ml Successive 10x dilutions in 20% $HClO_4$

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% $HClO_4$ this gives

1, 2, 5, 8, 10, 20, 50, 80, 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 Na_2CO_3

4 parts NaCl

1 part KNO_3 pulverized to -80 mesh

7% $SnCl_2$ in 70% HCl

20% KSCN in H_2O

Extractant - 1 part tri-n-butyl phosphate

9 parts carbon tetrachloride

Standards

1000 gamma/ml W

.18 gms Na_2WO_4 $2H_2O$ dissolved in H_2O, 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

2. Sinter in rotary for 2 to 3 minutes (Flux dull red for one minute)
3. Cool, add 10 mls H_2O, heat in sand bath to boiling, cool, let sit overnight
4. Stir, crush, and mix. Let settle
5. Take 2 ml aliquot into screw cap test tube
6. Add 7 mls $SnCl_2$, heat in hot water bath for 5 minutes (80°C)
7. Cool to less than 15°C
8. Add 1 ml 20% KSCN, mix (if lemmon yellow; compare color standard 10x)
9. Add ½ ml extractant, cap, shake vigorously 1 minute
10. Compare color

Molybdenum in Water Samples

1. Transfer 50 mls to 125 separatory funnel
2. Add 5 ml .2% ferric chloride in conc HCl
3. Add 5 mls of mixed KSCN and $SnCl_2$
4. Add 10 mls isopropyl ether, shake for 1 minute, and allow phases to seperate
5. Drain off water
6. Compare the color of extractant

Standardization

Pipette 0, .2, .5, 1, 2, 3, 4, 5, mls of 1 gamma/ml and 1, 1.5, 2, mls of 10 gamma/ml dilute to 50 mls with demineralized H_2O, and continue step #2.

It is equivalent to -

1, 4, 10, 20, 40, 60, 80, 100, 200, 300, 400 ppb Mo

Artificial color - Nabob orange extract dilute with 1:1 H_2O to methanol to match. Seal tightly

$SnCl_2$ - 15% in 15% HCl

300 gm $SnCl_2 \cdot 2H_2O$ + 300 mls HCl, until $SnCl_2$ dissolved dilute to 2 liters

KSCN - 5% in H_2O

Mixed $SnCl_2$ - KSCN

3 parts $SnCl_2$ to 2 parts KSCN

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 teshtron 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 mμ against a demineralized water blank
4. Read again at 400 mμ 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 H_2O, shake for one hour. Add 46.3 grams ferric perchlorate [$Fe(ClO_4)_3 \cdot 6H_2O$] (GFS 39) and 47 grams aluminum perchlorate [$Al(ClO_4)_3 \cdot 8H_2O$] (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

NAME	B.W. Kyba
EDUCATION	Four year BSc in Geology University of Alberta
EXPERIENCE	Geologist, Brascan Resources - 1974 Geologist, Pechiney Development Ltd. - 1975-1976 Staff Geologist, AMAX Minerals Exploration, 1976 Present

STATEMENT OF QUALIFICATIONS

NAME	L.R. Flint
EXPERIENCE	Climax Molybdenum Company of British Columbia Limited - Engineering Assistant May 2, 1966 - May 15, 1979 Yorke-Hardy Project - Hudson's Bay Mtn. Smithers, B.C. Kitsault Project - Kitsault, B.C. AMAX Potash Limited - May 16, 1979 to present Geological Technician: claim staking, line cutting, soil sampling, drill core splitting, drill supervision, camp building and road building.

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