5447

103P/6W

1974 Geological & Geochemical Assessment Report

MOHAWK MOUNTAIN MoS_2 PROPERTY
CLAIMS Fast #1-22 inclusive
LOCATED 4 miles south of Alice Arm, B.C.
LATITUDE 55°26'N LONGITUDE 128°29'W
Skeena Mining Division 103 P 6W

By H.M. Meixner and
D.G. Allen, P.Eng. (B.C.)

For Amax Exploration, Inc.
Work was carried out during August 14 - 26, 1974

1974 Geological and Geochemical Assessment Report

TITLE	Mohawk Mountain MoS_2 Property Fast (#1-22 inclusive) Claims
AUTHORS	H.M. Meixner and D.G. Allen, P.Eng. (B.C.)
DATE	December, 1974
COMMODITY	Mo
LOCATION-Area	Alice Arm, B.C.
-Mining Division	Skeena
-Coordinates	55°26'N Latitude 128°29'W Longitude
-NTS	103 P6

AMAX EXPLORATION, INC.
Vancouver Office

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SUMMARY

The Fast claims were located on Mohawk Mountain to cover ground between Climax's Lime Creek molybdenum orebody and United Chieftain's Roundy Creek orebody. The strategic location of this ground as well as the presence of mineralized granitic float and of secondary biotite in the Bowser sediments led to the staking of a block of 22 claims as part of the 1974 Kitsault Prospecting Program.

The entire claim area is underlain by greywackes and argillites of the Upper Jurassic to Lower Cretaceous Bowser assemblage. No molybdenite mineralization was found in place. Several geochemical anomalous areas can be related to transported mineralized float.

CONCLUSIONS

There is no surface exposure of an Alice Arm type intrusion on the Mohawk claims. Lamprophyre or diabase dykes and the presence of sporadic secondary biotite may be indicators of deeper seated intrusive activity.

RECOMMENDATIONS

In view of the strategic location of the Fast claim group it is recommended that an induced polarization survey be carried out to test for sulphides at depth. The area south of the claim group should be prospected further.

CHAPTER I - INTRODUCTION

Location and Access

Mohawk Mountain is located approximately two miles due south of the Kitsault townsite and four miles south of the town of Alice Arm. Access is by means of helicopter.

Claims

The Mohawk Mountain MoS_2 Property consists of twenty-two contiguous mineral claims, Fast (1-22), recorded on July 5, 1974. The approximate center of the claim group is defined by longitude 55°26'N and latitude 128°29'W and it is situated in the Skeena Mining Division, B.C.

Claim	Record Number	Expiry Date
Fast 1	38863	July 5, 1975
Fast 2-22	38842-38862	July 5, 1975

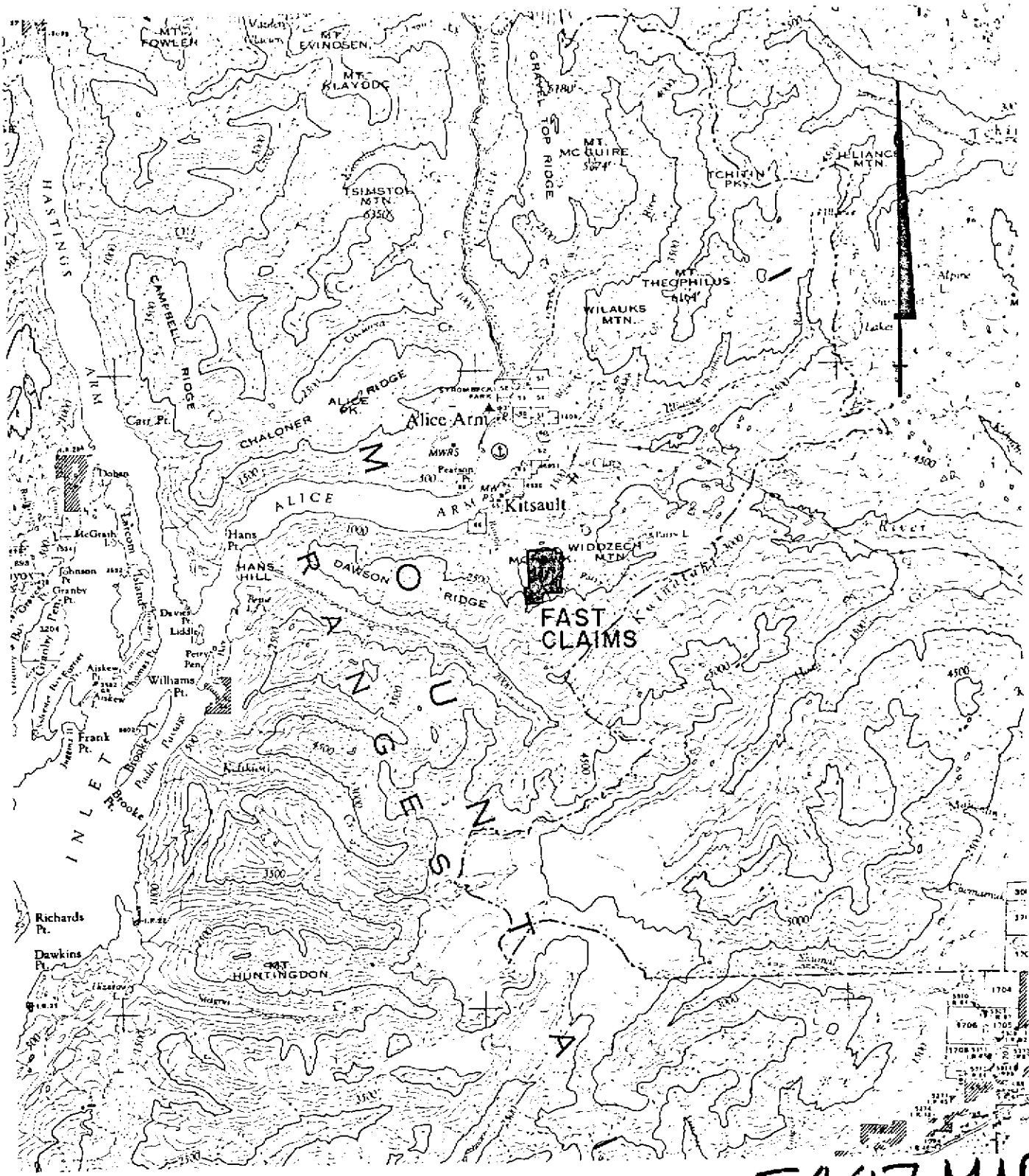
The Fast #6-12 claims comprise the A Group. Fast #1-5 and Fast #13-22 comprise the B Group. Work for two years is to be applied to the A Group and work for one year to be applied to the B Group.

Physiography

The claims lie between 2,000 and 3,200 feet above sea level. The upper portions consist of intermittent thickly wooded and open swampy ground; below 2,500 feet tree and bush cover is extremely dense. Slopes are generally steep; deeply incised gulleys are common in the eastern part of the claims. Moss covered hummocks and elongated ridges constitute the outcrops in the summit area.

Previous Work

The Mohawk Mountain area was previously held by



5447 MAP1

AMAX EXPLORATION INC.

MOHAWK MOUNTAIN MOLYBDENITE PROPERTY
FAST CLAIMS
SKEENA M.D. — B. C.

LOCATION MAP

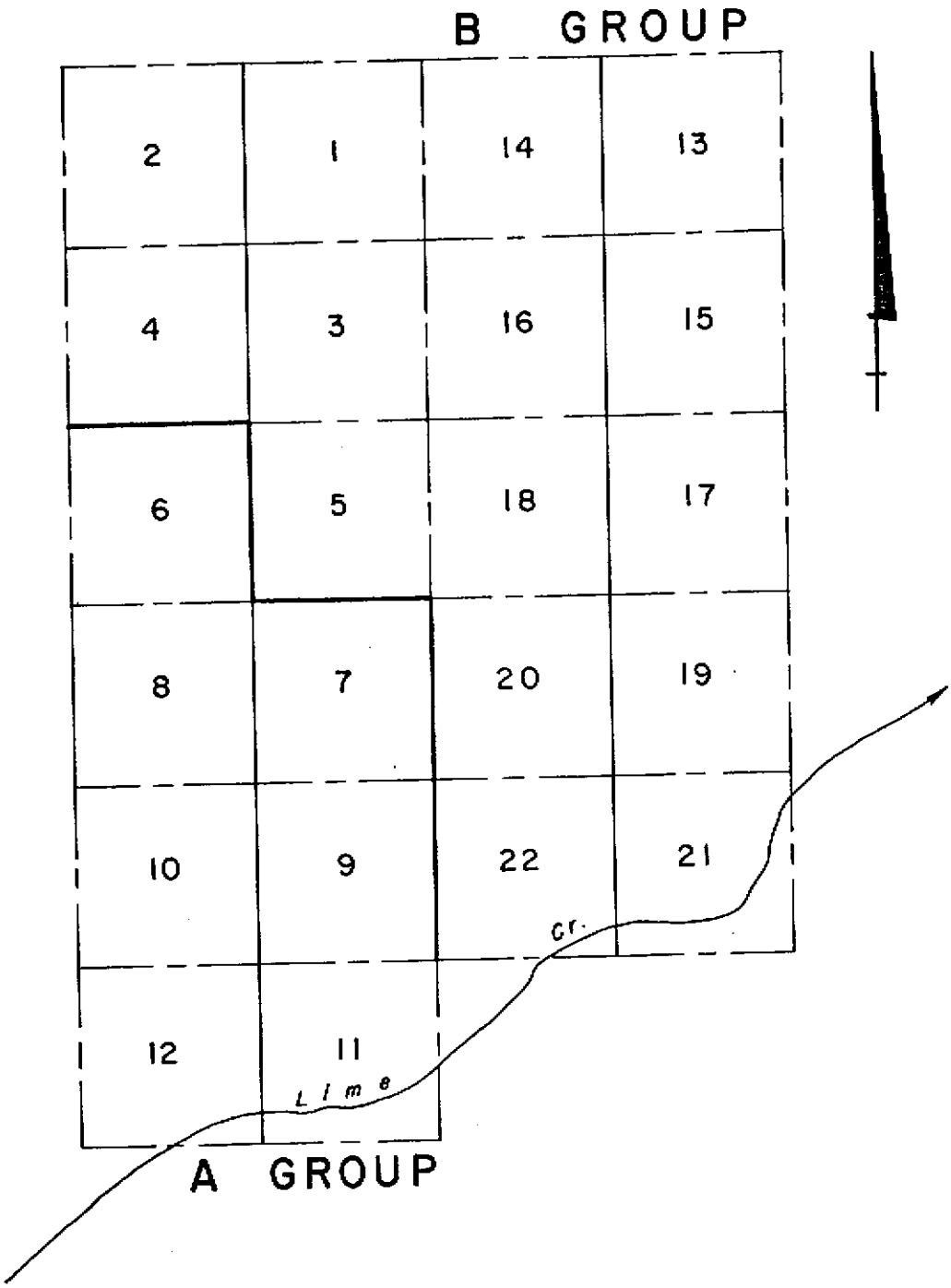
Donald G. Allen

SCALE 5 4 3 2 1 0 5 MILES

SCALE 1 : 250,000

N. T. S. Ref. 103 P 6

FIG. 1



5447
MAP 2

AMAX EXPLORATION INC.

MOHAWK MOUNTAIN MOLYBDENITE PROPERTY
FAST CLAIMS
SKEENA M.D. — B. C.

CLAIM MAP

SCALE 1500 0 1500 FEET
1 : 18,000

Donald S. Cellan

N. T. S. Ref. 103 P 6

FIG. 2

Kennco (Western) Ltd. Twenty-eight claims were located in the fall of 1970 and geological mapping and geochemical soil sampling were carried out the following summer. According to an assessment report by C.S. Ney of Kennco results of this work were negative. The claims were allowed to lapse and the area came open in 1974.

Scope of Present Work

Work on the claims was performed by a crew of four to six men over a thirteen day period from August 14 to 26, 1974. A flagged and chained grid of 19 line miles was established consisting of a north-south base line and cross lines spaced 400 feet apart. Geological mapping at 200 feet to the inch was carried out over the entire area. A total of 486 soil samples at a sample spacing of 200 feet were collected and analyzed for Mo, Cu, Pb, Zn, Mn and Fe.

CHAPTER II - GEOLOGY

Three distinct rock units occur in the Alice Arm area. They are the northwest trending Coast Range Crystalline Complex; the northwest trending Hazelton assemblage of volcanics and sediments and the northeast trending Bowser assemblage of sedimentary rocks which flanks the Coast Range batholith. The stratigraphy of the whole of the Mesozoic section is imperfectly known at present. A relative age and distribution table is shown in Table I (after page 4).

The Bowser assemblage is the result of Upper Jurassic and Lower Cretaceous sedimentation into the Bowser Basin. East of the Coast Range intrusions the Bowser assemblage thickens gently into the central part of the basin. Within the basin sediments consist of marine and freshwater shales, argillites, greywackes, sandstones and conglomerates with minor tuffs.

Massive, medium grained, light to medium grey greywacke is the most common rock type in the Kitsault area. Interbedded with the greywackes are finer grained dark grey to black argillites, microgreywackes and siltstones. In the Alice Arm region Bowser sediments strike northeasterly, that is, perpendicular to their regional northwest strike elsewhere along the flanks of the Coast Range batholith.

MoS_2 Occurrences in the Alice Arm Area

Three major molybdenum occurrences are located in the Alice Arm area. They are Lime Creek, Roundy Creek and Bell Moly. Although they are regarded as satellites of the Coast Range intrusions, they differ from them in that the Alice Arm types are more acid in composition and of younger age. Alice Arm type intrusions consist of quartz monzonite stocks which are round to subround in plan and have generally steeply inclined contacts. Where mineralized the igneous host rocks exhibit an usually well

PERIOD	EPOCH	FORMATION OR GROUPS		LITHOLOGY
	Recent			Sand, gravel, clay
QUATERNARY				
	1.5 m.y.			Plateau basalts
				Lamprophyre dykes
TERTIARY				
	38 m.y.			
	Eocene	ALICE ARM PLUTONS	COAST RANGE INTRUSIONS	Quartz monzonite, granite granodiorite
	54 m.y.			
	64-65 m.y.			
	Upper			Diorite, quartz-diorite, granodiorite, gneiss
CRETACEOUS		INTRUSIVE CONTACT		
	Lower			
	136 m.y.	BOWSER ASSEMBLAGE	HAZELTON GROUP	Marine and terrestrial greywacke, argillite, siltstone, sandstone conglomerate
	Upper			
JURASSIC	Middle	HAZELTON ASSEMBLAGE		Andesitic-dacitic flows, interbedded with greywackes and argillites
	Lower			Volcanic clastics interbedded with greywacke, argillite, breccias, minor flows
	190-195 m.y.			

developed quartz vein stockwork and weak sericite and argillic alteration. Zones of quartz-biotite hornfels envelop the intrusions. Molybdenite mineralization occurs within the quartz vein stockwork which is present in the intrusive as well as the hornfels. Lamprophyre dykes intrude Alice Arm type intrusions, the zones of hornfels, and lamprophyre dykes may be favourable indicators for the possible presence of Alice Arm type of molybdenum deposit.

Property Geology

The claim group is underlain by Upper Jurassic to Lower Cretaceous Bowser assemblage sediments. Greywacke is the most common rock type comprising more than 50% of the outcrop area. Massive argillite underlies most of the eastern part of the claims but in the western portion it is interbedded with greywacke.

Greywackes are light to medium grey rocks with poorly sorted textures and no discernible original bedding. They are well indurated, competent rocks which break across quartz grains in them. Lithic and argillaceous fragments vary in abundance from one outcrop to the next. The abundance of argillaceous fragments as well as argillaceous matrix material increases from west to east on the property.

Phyllitic greywackes and argillites are present in the creek flowing northwesterly across Fast #4 and 6 claims. In thin section, feldspars and rock fragments appear stained and partially recrystallized. Calcite, anthophyllite and biotite occur in the matrix: calcite also fills some of the fractures. Pyrite occurs as well formed cubes within interbedded argillites. Small scale chevron and contorted folding (less than 6 inches wide) is common in the central part of the claims.

Massive bedded argillites were mapped in canyons at the eastern edge of the property. Bedded argillites (less than

12 inches thick) occur in a 100 foot vertical exposure on Fast #7. Pyrite is present in the coarser grained interbeds as disseminations. Quartz veins (some containing calcite) are intruded parallel to bedding. Fracturing is generally perpendicular to bedding.

Several dykes intrude argillites: all strike 045° and dip 70° to the southeast. They approximate diabase in composition and consist of 50% plagioclase, 25% calcite, 20% zoisite, and 5% hornblende.

Two small shears on Fast #10 and 20 contain quartz and K-feldspar. Nearby sediments contain anthophyllite and zoisite. A rock specimen taken near a faulted zone in the northeast corner of Fast #12 has a composition of 20% plagioclase, 10% orthoclase, 20% quartz and 50% argillaceous matrix. The matrix has been recrystallized to form a granoblastic texture. Clay mineral alteration was noted in the orthoclase.

Molybdenum bearing granodiorite boulders are found in the northwest and southeast corners of Fast #5. The granodiorite boulders contain a well developed stockwork of quartz veins. They average 3/4 inch in width and comprise up to 30 veins per square foot. Molybdenite occurs as disseminations along dry fracture walls associated with rusty coatings. Some molybdenite occurs along edges of quartz veins as fine sugary disseminations and in patches. The boulders closely resemble ones seen in the Kitsault Pit.

Structural Geology

Several northeast faults transect the claims area and at least one northwest trending fault is present. A northeast fault cuts the northwest fault and shows a displacement of 400 feet, in which the east side has moved south relative to the west side.

Numerous north trending linears are present in the northeast portion of the claims area. They appear on air photos and can occasionally be discerned in the field.

CHAPTER III - GEOCHEMISTRY

General Statement

A total of 486 soil samples were collected and analysed for Mo, Cu, Pb, Zn, Mn and Fe. Results of analyses are tabulated in Appendix III.

Method

Soil samples were collected at 200 foot intervals along the base line and all cross lines. They were collected, wherever possible, from the B horizon with the aid of a mattock and placed into numbered Kraft wet-strength envelopes.

Samples were shipped to the AMAX Laboratory in North Burnaby where they were analyzed for Mo, Cu, Pb, Zn, Mn and Fe.

Cumulative frequency plots, mean and standard deviation were calculated for soils using log paper. The Mo content of soils was contoured by hand using the intervals, 02-19 ppm Mo, 20-29 ppm Mo, 30-49 ppm Mo, 50+ ppm Mo. Cu, Pb, Zn, Mn and Fe values were not contoured.

Environment

The Mohawk Mountain property lies atop a wooded mountain at an average elevation of 2,700 feet. Relief on the grid is moderate to steep and deeply incised canyons occur in the eastern part. In the central peak area topography is gently undulating broken by occasional steep slopes.

A wet coastal climate prevails in the region. Winters are generally temperate; snow covers the area from early October until July. Summers are temperate with temperatures in the 70°F range and generally wet. Sporadic rain and fog are common during summer months.

Vegetation includes spruce and hemlock as well as

dense underbrush. Lower densely vegetated slopes give way to less densely vegetated areas near the summit which has numerous swampy meadows.

Glacial direction is from northeast to southwest. Numerous moss covered hummocks are elongated along this trend and occasional glacial striae are seen in outcrops. A thin covering of glacially transported soil covers steeper slopes. Gulleys and other depressions contain glacially derived boulders, gravel and sand.

Soils are moderately oxidized. Podzolic soils with well developed Ah and Ae are present beneath the uppermost humus layers. In meadow areas the Ah layer is greater than 16 inches thick. Mottled gleysols with well developed Bt and Bg are common along slopes.

Discussion of Results

The analytical results for molybdenum were plotted on a cumulative frequency diagram. Three populations emerged from this analysis. Since two of the populations coincided with areas of known molybdenite-bearing float they were grouped together and a threshold value of 20 ppm was taken as the upper background limit. Values above 30 ppm were considered anomalous. Scavenging effects of manganese and the presence of Fe were considered negligible.

Mo - Two anomalous areas are present, one on Fast #17 and one on Fast #18. Both anomalies have values several times background. They are centered about known occurrences of molybdenite bearing float and probably do not reflect any in-place mineralization. Negative and background values prevail throughout the rest of the claim area.

Cu - Copper values range from 4 to 38 ppm. One sporadic value of 114 ppm Cu is present. The populations of

copper values appears homogeneous within the 4-38 ppm range.

Pb - Lead values in soils range from 8 to 80. Several values above 100 ppm are present but are accompanied by very high Mn values and are located near the mineralized float areas.

Zn - Zinc values range from 12 to 200 ppm. They average approximately 40 ppm. Several values of 200+ ppm Zn can be examined by the presence of mineralized float.

Mn - Manganese values average approximately 300 ppm and range from 20 to 12,000 ppm. Several high Mn values coincide with high Mo, Pb and Zn values.

Fe - Iron content in soils range from 0.5 to 6.6. The average Fe content of soils is 3.5 ppm.

H.M. Meixner

D.G. Allen, P.Eng. (B.C.)

APPENDIX I - STATEMENT OF COSTS

Claim Name	Record Number	Expiry Date
Fast 1	38863	July 5, 1975
Fast 2 - 22	38842-38862	July 5, 1975

Period of Work - August 14, 1974 to August 26, 1974

Summary of Work - Geological Mapping 15.3 square miles
Geochemical Sampling 15.3 square miles
Geochemical Analyses 486 samples

Personnel Employed

H.M. Meixner - 675 West 32nd Avenue, Vancouver, B.C.
Geologist 12 days @ $43.00/day $516.00
F.H. Foster - 3370 Thompson Crescent, West Vancouver, B.C.
Senior Assistant 12 days @ $30.00/day 360.00
Wim Van der Poll - 3567 West 38th Ave., Vancouver, B.C.
Senior Assistant 4 days @ $33.00/day 132.00
L.V. Penco - 6570 Raleigh Street, Vancouver, B.C.
Junior Assistant 12 days @ $25.00/day 300.00
C.J. Perrin - 1777 Mathers Ave., West Vancouver, B.C.
Junior Assistant 4 days @ $22.00/day 88.00
J.P. Tymchyshyn - 2525 Westmall, Vancouver, B.C.
Junior Assistant 12 days @ $18.00/day 216.00

Board - 56 man days @ $12.00/day 672.00

Geochemical Analyses - 486 samples for Mo, Cu, Pb, Zn, Mn, Fe @ $3.00/sample 1,458.00

Transportation - 6.0 helicopter hours - Alouette III including fuel @ $351.00 per hour (includes ferry time from Stewart) 2,106.00

Report Preparation and Drafting 100.00

Total $5,948.00

This work is to applied for two years on

Fast #6 - 12 inclusive

Donald S Allen

and for one year on

Fast #1 - 5 inclusive and on Fast #13 - 22 inclusive.

APPENDIX II - STATEMENT OF QUALIFICATIONS

H.M. Meixner - BSc. Geology, U.B.C. 1969. Two years with E.P. Sheppard Associates Ltd., Vancouver as Exploration Geologist. One year with Pechiney Development Ltd. as Exploration Geologist. Presently employed by Amax Exploration, Inc.

F.H. Foster - BSc. Geology, U.B.C. 1974. Three seasons regional mapping with the Geological Survey of Canada 1971-1973. One season exploration geology with Amax Exploration, Inc. 1974.

Wim Van der Poll - BSc. Geology, University of Tulsa 1971. Three seasons as senior assistant with Dolmadge Campbell & Associates 1968-1971. Two seasons as exploration geologist with Amax Exploration, Inc. 1973-1974.

L.V. Penco - 3rd year Geological Engineering Student, U.B.C. Three summers experience as geological assistant.

C.J. Perrin - 2nd year Botany Student U.B.C. Two field seasons as geological assistant with Amax Exploration, Inc.

J.P. Tymchyshyn - 3rd year Geology Student U.B.C. One summers experience as field assistant with Amax Exploration, Inc.

APPENDIX III - GEOCHEMICAL ANALYSES

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Sept 1974 TYPE SAMPLES Soil

PROJECT ORDER # 2029 LOCATION KITSALT 63-D

REQUESTED BY Amax H. MEIXNER DISPOSITION OF REJECTS

No.	Sample	pH	Mo ppm	Cu ppm	Ni	Mn ppm	Fe %	Zn ppm	Pb ppm	No.
01	4DFS 152		4	10		40	0.4	14	10	01
02	153		10	22		440	4.9	66	40	02
03	154		4	18		220	5.3	40	24	03
04	155		8	8		100	1.1	20	20	04
05	156		4	16		560	3.5	124	24	05
06	157		6	6		100	1.5	16	20	06
07	158		8	22		140	3.7	36	20	07
08	159		4	20		180	8.3	40	26	08
09	160		8	4		40	0.9	8	20	09
10	161		4	10		120	3.3	28	24	10
11	162		2	8		60	0.8	16	16	11
12	163		8	8		120	2.8	22	34	12
13	164		2	4		10	0.3	8	10	13
14	165		16	32		2000	5.4	66	50	14
15	166		4	20		33600	7.9	124	44	15
16	167		26	10		100	1.0	12	40	16
17	168		28	16		200	5.6	38	46	17
18	169		16	12		400	3.0	32	40	18
19	170		40	40		6000	3.0	192	60	19
20	171		10	16		100	4.6	30	28	20
21	172		32	16		5600	3.1	110	48	21
22	173		14	16		240	2.6	40	28	22
23	174		14	12		160	2.4	26	28	23
24	175		28	32		400	5.4	66	50	24
25	176		12	20		120	4.8	28	26	25
26	177		26	14		13000	6.1	64	72	26
27	178		4	12		240	3.2	36	30	27
28	179		4	12		60	0.9	18	12	28
29	180		6	16		380	4.4	60	32	29
30	181		4	24		260	6.9	42	32	30
31	182		8	16		160	5.2	24	30	31
32	183		8	20		160	5.1	36	30	32
33	184		2	8		80	1.2	12	20	33
34	185		4	20		340	5.6	38	26	34
35	186		6	22		320	6.6	32	24	35
36	187		28	32		320	6.5	68	64	36
37	188		14	8		460	5.5	32	40	37
38	189		6	16		240	6.1	38	36	38
39	190		20	10		2000	6.0	62	36	39
40	G 21		12	1040		220	2.9	196	70	40

COMMENT:

DATE SAMPLES RECEIVED

DATE REPORTS MAILED

ANALYST

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

(2)

DATE Sept 1974 TYPE SAMPLES Soil

PROJECT Order # 2029 LOCATION KITSALT 630D

REQUESTED BY Amax H. MEIXNER DISPOSITION OF REJECTS

No.	Sample	pH	Mo ✓	Cu ✓	Ni		Mn ✓	Fe ✓		Zn ✓	Pb ✓		No.
01	4DFS191	-	16	16			280	4.3		28	24		01
02	192	-	8	20			260	8.5		32	28		02
03	193	-	14	14			80	5.0		32	28		03
04	194	-	18	20			60	5.3		30	28		04
05	195	-	16	16			120	6.8		32	40		05
06	196	-	8	28			200	[illegible]		64	36		06
07	197	-	8	24			200	5.8		40	86		07
08	198	-	10	16			120	7.2		28	34		08
09	199	-	6	16			640	4.9		76	34		09
10	200		8	20			200	6.0		38	30		10
11	201	-	4	8			160	2.8		28	98		11
12	202		6	20			120	7.1		26	28		12
13	203	-	2	40			540	6.4		76	36		13
14	204	-	6	16			360	5.8		48	28		14
15	205	-	4	64			1440	8.2		64	140		15
16	206	-	4	22			280	6.8		40	28		16
17	207	-	4	32			260	6.9		46	30		17
18	208	-	8	12			80	2.7		24	18		18
19	209	-	8	20			140	7.1		34	28		19
20	210	-	8	20			240	5.1		38	28		20
21	211	-	2	12			240	3.7		52	24		21
22	212	-	4	18			320	8.0		44	148		22
23	213	-	8	32			4800	4.2		136	68		23
24	214	-	6	14			840	4.7		80	30		24
25	215	-	6	12			1320	4.4		136	50		25
26	216		4	16			3400	3.3		44	36		26
27	217		6	16			340	3.9		44	148		27
28	218	-	22	44			24000	7.5		220	40		28
29	219	-	10	6			200	1.8		20	16		29
30	220	-	6	8			220	4.9		36	44		30
31	221	-	2	16			880	0.8		44	12		31
32	222	-	4	8			120	2.0		20	12		32
33	223	-	8	12			200	1.1		24	30		33
34	224	-	10	16			200	2.9		32	24		34
35	T 225		34	18			240	1.8		164	430		35
36													36
37													37
38													38
39													39
40	C-22		54	240			260	2.1		192	120		40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

(12)

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

TE Sept 1974 TYPE SAMPLES Soil

PROJECT ORDER # 2029 LOCATION KITSALT 130D

REQUESTED BY Amax H. MELXNER DISPOSITION OF REJECTS

No.	Sample	pH	Mo ✓	Cu ✓	Ni	Mn ✓	Fe ✓	Zn ✓	Pb ✓	No.
01	4 DMS 102		16	18		2320	3.3	80	84	01
02	103		16	12		5200	2.8	66	26	02
03	104		6	8		120	0.5	16	4	03
04	105		48	14		6600	5.1	76	36	04
05	106		8	12		160	1.8	34	16	05
06	107		18	18		720	5.5	94	48	06
07	108		8	16		220	6.5	48	28	07
08	109		10	34		1040	2.5	30	90	08
09	110		10	20		280	6.6	48	40	09
10	111		26	22		180	7.1	32	84	10
11	112		10	12		160	3.9	24	24	11
12	113		2	8		60	0.9	18	8	12
13	114		24	16		160	5.8	30	40	13
14	115		8	8		60	0.8	16	20	14
15	116		28	32		420	5.2	72	88	15
16	117		36	20		240	3.3	52	40	16
17	118		18	16		220	4.6	64	64	17
18	119		36	30		580	5.0	72	40	18
19	120		10	8		80	1.5	20	34	19
20	121		4	12		180	1.8	48	24	20
21	122		12	16		350	2.9	70	24	21
22	123		8	10		100	2.4	20	10	22
23	124		90	32		800	8.3	96	60	23
24	125		44	28		1840	5.2	74	48	24
25	126		18	18		260	2.0	52	60	25
26	127		54	26		1460	4.8	96	72	26
27	128		18	8		80	0.6	16	8	27
28	129		14	20		1120	5.9	204	44	28
29	130		14	16		400	4.4	22	8	29
30	131		20	16		3600	>10.0	46	36	30
31	132		14	16		100	1.1	24	8	31
32	133		18	24		360	5.2	42	36	32
33	134		18	16		140	4.6	24	28	33
34	135		28	8		140	2.1	32	16	34
35	136		94	24		12000	3.8	136	168	35
36	137		12	16		180	5.1	40	24	36
37	138		20	16		100	4.5	22	28	37
38	139		8	30		520	6.3	56	8	38
39	140		6	28		240	8.6	36	32	39
40	Cp 26		10	24		1440	2.2	144	28	40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

(10)

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Sept 1974 TYPE SAMPLES Soil

PROJECT ORDER # 2029 LOCATION KITSALT 430 D

REQUESTED BY Amax H. METNER DISPOSITION OF REJECTS

No.	Sample	pH	Mo ✓	Cu ✓	Ni	Mn ✓	Fe ✓	Zn ✓	Pb ✓	No.
01	4DMS 141	—	14	6		40	0.7	16	20	01
02	DMS 142	—	18	16		120	2.7	24	90	02
03	143	—	42	16		660	2.4	32	28	03
04	144	—	6	6		60	1.1	12	16	04
05	145	—	34	30		440	4.7	54	46	05
06	146	—	6	6		80	1.5	12	16	06
07	147	—	2	10		240	4.3	30	24	07
08	148	—	4	30		260	5.9	44	24	08
09	149	—	6	14		60	4.1	24	20	09
10	150	—	10	20		300	2.6	60	56	10
11	151	—	12	20		220	3.3	46	34	11
12	152	—	4	24		100	6.4	28	28	12
13	153	—	6	50		260	4.7	96	24	13
14	154		8	10		160	3.6	32	30	14
15	155		4	8		100	0.7	16	16	15
16	156	—	14	14		440	3.2	70	50	16
17	157	—	16	22		1400	4.6	156	50	17
18	158		20	18		1140	2.1	112	40	18
19	159		6	6		80	0.3	16	8	19
20	160		10	28		340	3.7	72	26	20
21	161		8	20		220	6.5	34	28	21
22	162		8	14		120	5.0	24	20	22
23	163		6	8		100	1.4	16	24	23
24	164	—	4	16		80	5.9	22	26	24
25	165	—	6	52		40	0.2	28	8	25
26	166		16	12		140	4.8	40	36	26
27	167	—	2	8		40	1.5	16	12	27
28	168	—	4	22		300	4.4	60	28	28
29	169	—	6	2		20	0.3	6	10	29
30	170	—	10	8		180	4.4	38	30	30
31	171	—	8	16		400	3.9	32	26	31
32	172	—	12	20		120	4.3	44	40	32
33	173	—	8	20		280	6.5	40	28	33
34	174	—	6	16		120	3.5	36	80	34
35	175	—	8	16		300	4.0	58	36	35
36	176	—	12	34		300	6.0	60	44	36
37	177	—	8	16		300	6.6	40	26	37
38	178	—	6	16		320	5.0	58	2[illegible]	38
39	179	—	6	18		240	4.2	34	26	39
40	- C-21		12	1000		200	4.0	208	52	40

COMMENT:

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Sept 1974 TYPE SAMPLES Soil

PROJECT Order # 2029 LOCATION KITSALT 630 D

REQUESTED BY H. MEITNER DISPOSITION OF REJECTS

No.	Sample	pH	Mo ✓	Cu ✓	Ni	Mn ✓	Fe ✓	Zn ✓	Pb ✓	No.
01	42[illegible]S 190	-	8	10		120	4.3	28	28	01
02	DMS 191	-	6	12		1500	5.0	42	10	02
03	192	-	6	10		140	3.4	32	26	03
04	193	-	6	16		320	5.6	64	40	04
05	194	-	8	20		2600	5.4	60	70	05
06	195	-	4	8		210	2.8	32	28	06
07	196	-	4	6		120	0.6	12	16	07
08	197	-	6	12		300	5.0	68	36	08
09	198	-	8	18		1440	3.9	88	40	09
10	199	-	10	10		520	2.8	64	52	10
11	190	-	10	20		460	5.5	76	70	11
12	191	-	4	8		160	2.3	28	16	12
13	192	-	4	20		280	3.2	60	24	13
14	193	-	4	10		260	3.9	52	40	14
15	194	-	10	22		11600	8.5	50	62	15
16	195	-	10	30		440	6.5	26	40	16
17	196	-	8	22		1560	4.3	76	48	17
18	197	-	10	24		1480	3.7	48	66	18
19	198	-	10	8		840	3.7	36	28	19
20	199	-	10	18		320	2.3	52	80	20
21	200	-	10	24		140	0.9	40	12	21
22	201	-	6	22		600	4.2	80	36	22
23	202	-	6	24		2300	5.8	70	32	23
24	203	-	6	18		380	4.5	48	16	24
25	204	-	6	16		300	4.5	48	28	25
26	205	-	8	16		2120	3.8	68	40	26
27	206	-	10	20		240	4.7	64	76	27
28	207	-	10	8		3700	4.4	36	80	28
29	208	-	4	12		300	3.9	40	24	29
30	209	-	4	16		240	4.2	36	26	30
31	210	-	4	20		140	6.6	26	20	31
32	211	-	4	22		120	5.2	28	20	32
33	212	-	6	28		260	8.2	32	26	33
34	213	-	4	10		240	5.1	24	40	34
35	214	-	4	18		180	3.5	38	20	35
36	215	-	8	18		1760	5.2	96	30	36
37	216	-	6	14		600	4.0	52	24	37
38	217	-	4	16		120	0.9	50	16	38
39	218	-	10	16		540	6.4	52	26	39
40	G 22		54	240		250	2.1	124	112	40

COMMENT:

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AMAX EXPLORATION INC. ANALYTICAL REPORT

(3)

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Sept 1974 TYPE SAMPLES Soil

JECT Order # 2029 LOCATION KITSALT 630 D

REQUESTED BY H. MEITNER DISPOSITION OF REJECTS

No.	Sample	pH	Mo ✓	Cu ✓	Ni		Mn ✓	Fe ✓		Zn ✓	Pb ✓			No.
01	4DMS 219	-	4	10			240	2.8		44	24			01
02	220		12	20			540	6.8		112	50			02
03	221	-	10	36			3400	3.9		244	40			03
04	222		8	46			2400	7.4		160	92			04
05	223		8	20			300	4.2	38	[illegible]	36			05
06	224		12	22			6800	5.9	10[illegible]		74			06
07	225		8	10			180	1.9	26[illegible]		20			07
08	226	-	4	8			[illegible]80	2.9	20		20			08
09	227	-	4	8			1[illegible]0	2.8	16[illegible]		16			09
10	228	-	4	20			280	8.2	68		32			10
11	229		2	10			180	1.7	[illegible]8		28			11
12	230		12	32			1760	3.9	68		52			12
13	231	-	4	22			320	6.8	40		26			13
14	232		4	18			160	4.8	28		30			14
15	233		8	24			200	3.5	42		34			15
16	234		8	22			360	6.1	40		36			16
17	235		14	16			320	4.4	36		30			17
18	236		4	8			160	1.0	22		20			18
19	237		8	32			2320	3.5	72		42			19
20	238		8	16			180	6.1	32		30			20
21	239		6	24			1529	4.6	80		26			21
22	240		4	20			680	4.6	50		28			22
23	241		4	14			300	5.3	14		36			23
24	242	-	2	14			400	5.2	42		20			24
25	243	-	6	22			1560	6.9	44		28			25
26	244		10	14			1400	7.9	52		40			26
27	245	-	4	14			240	3.2	44		90			27
28	246	-	10	20			2700	5.1	100		36			28
29	247	-	3	28			1440	3.8	88		30			29
30	248	-	6	30			460	7.8	58		32			30
31	249	-	12	22			2840	>10.0	30		34			31
32	250		2	26			400	5.8	54		26			32
33	251	-	2	30			200	7.0	40		20			33
34	252	-	2	20			840	4.6	100		60			34
35	253	-	4	16			200	7.5	28		26			35
36	254	-	2	10			220	6.0	36		20			36
37	255	-	2	10			360	6.0	40		24			37
38	256	-	4	20			280	6.1	36		24			38
39	257	-	6	12			200	5.1	36		56			39
40	G 26		6	24			320	2.3	28		24			40

COMMENT:

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BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Sept 1974 TYPE SAMPLES Soil

JECT Order # 2029 LOCATION KITSALT BED

EQUESTED BY H. METXNER DISPOSITION OF REJECTS

No.	Sample	pH	Mo ✓	Cu ✓	Ni		Mn ✓	Fe ✓		Zn ✓	Pb ✓			No.
01	4DMS 258	-	6	8			40	5.4		16	18			01
02	259	-	4	26			360	3.2		48	18			02
03	260	-	4	22			220	6.7		34	22			03
04	261	-	6	26			160	9.2		24	26			04
05	262	-	4	26			440	5.1		62	24			05
06	263	-	6	24			160	7.7		32	20			06
07	264	-	4	22			280	5.7		54	24			07
08	265	-	6	14			360	5.4		32	20			08
09	266	-	6	8			300	4.3		38	28			09
10	267	-	6	16			340	4.5		70	32			10
11	268	-	6	16			300	4.8		44	32			11
12	269	-	4	24			160	5.4		38	22			12
13	270	-	6	10			360	2.9		62	24			13
14	271	-	12	26			3600	3.9		180	58			14
15	272	-	8	22			480	5.2		68	22			15
16	273	-	6	20			560	5.0		104	28			16
17	274	-	8	2			340	0.5		10	24			17
	275	-	6	16			440	3.3		44	22			18
19	276	-	4	12			240	4.2		32	20			19
20	277	-	6	28			260	>10.0		34	28			20
21	278	-	0	10			1100	4.5		60	36			21
22	279	-	10	16			6400	3.8		104	36			22
23	280	-	8	16			320	4.1		88	30			23
24	281	-	6	22			320	5.7		56	28			24
25	282	-	6	22			200	7.2		32	22			25
26	283	-	6	20			720	3.9		90	24			26
27	284	-	4	14			100	3.2		24	20			27
28	285	-	8	30			640	3.4		80	32			28
29	286	-	4	24			300	3.3		76	32			29
30	287	-	6	14			760	3.2		46	20			30
31	288	-	4	24			600	8.4		48	34			31
32	289	-	4	14			440	2.3		96	46			32
33	290	-	2	10			3500	4.9		80	28			33
34	291	-	2	16			400	2.4		76	24			34
35	292	-	6	4			360	2.2		28	36			35
36	293	-	2	14			100	2.4		24	12			36
37	294	-	6	14			920	5.1		66	32			37
38	295	-	4	28			140	1.6		44	30			38
	296	-	2	10			1620	2.6		36	18			
40	G27		24	248			360	1.1		>4000	340			40

COMMENT:

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AMAX EXPLORATION INC. ANALYTICAL REPORT

(5)

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Sept 1974 TYPE SAMPLES Soil

OJECT Order # 2029 LOCATION KITSALT 630 D

REQUESTED BY H. MEITNER DISPOSITION OF REJECTS

No.	Sample	pH	Mo ✓	Cu ✓	Ni		Mn ✓	Fe ✓		Zn ✓	Pb ✓		No.
01	4DMS 297	-	10	114			900	5.6		108	24		01
02	298	-	14	20			10800	4.0		42	30		02
03	299	-	8	6			40	1.0		10	16		03
04	300	-	10	44			380	5.8		116	32		04
05	301	-	10	24			1040	4.2		76	34		05
06	302	-	8	30			280	7.1		34	22		06
07	303	-	12	28			4800	3.9		64	34		07
08	304	-	12	26			244	5.1		72	30		08
09	305	-	12	24			200	4.8		76	40		09
10	306	-	6	18			120	4.8		24	20		10
11	307	-	18	20			800	3.8		70	28		11
12	308	-	14	38			1760	4.6		92	44		12
13	309	-	14	34			1820	3.8		86	32		13
14	310	-	6	22			220	4.4		40	18		14
15	311	-	12	32			4800	4.8		90	60		15
16	312	-	10	24			4800	5.2		84	28		16
17	313	-	12	64			900	4.4		110	52		17
18	314	-	24	50			4400	7.7		100	54		18
19	315	-	8	18			120	3.9		30	16		19
20	316	-	10	14			180	3.0		34	30		20
21	317	-	8	28			320	4.8		56	26		21
22	318	-	6	16			6200	2.8		56	18		22
23	319	-	12	22			560	4.0		128	26		23
24	320	-	12	16			1440	4.1		120	26		24
25	321	-	4	14			240	3.5		38	24		25
26	222	-	8	26			1660	5.5		58	24		26
27	323	-	4	16			120	1.6		38	2[illegible]		27
28	324	-	4	6			240	0.7		16	[illegible]		28
29	326	-	4	36			240	5.1		56	18		29
30	326	-	4	30			220	6.0		50	24		30
31	327	-	4	18			280	4.0		44	18		31
32	328	-	6	20			640	4.4		40	20		32
33	329	-	4	20			220	5.1		44	22		33
34	330	-	16	24			240	6.5		48	28		34
35	331	-	8	20			220	4.3		36	18		35
36	332	-	8	24			120	5.0		30	2[illegible]		36
37	333	-	8	24			160	6.2		34	2[illegible]		37
38	334	-	12	26			120	8.6		42	3[illegible]		38
39	335	-	8	22			100	6.1		30	2[illegible]		39
40	G 21		14	>400			[illegible]00	3.7		122	5[illegible]		40

COMMENT:

DATE SAMPLES RECEIVED

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AMAX EXPLORATION INC. ANALYTICAL REPORT

(6)

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Sept, 1974 — TYPE SAMPLES Soil

PROJECT order # 2029 — LOCATION KITSALT 630 D

REQUESTED BY H. HEINER — DISPOSITION OF REJECTS

No.	Sample	pH	Mo ✓	Cu ✓	Ni	Mn ✓	Fe ✓	Zn ✓	Pb ✓	No.
01	4DMS 336	-	12	20		200	5.6	44	24	01
02	337	-	10	20		180	2.8	36	18	02
03	338	-	6	14		1160	1.3	50	16	03
04	339	-	12	18		200	4.4	44	20	04
05	340		10	16		300	2.3	58	24	05
06	341		2	4		220	0.4	16	8	06
07	342	-	2	24		220	8.1	38	22	07
08	343	-	2	10		120	2.4	24	18	08
09	344	-	4	10		120	2.5	28	34	09
10	345	-	10	14		320	4.2	80	24	10
11	346	-	12	16		200	5.5	40	24	11
12	347		10	32		240	8.7	52	28	12
13	348		12	6		400	1.4	36	16	13
14	349		10	24		180	7.4	40	18	14
15	350		8	26		200	9.2	32	20	15
16	351	-	4	16		120	5.9	22	16	16
17	352	-	4	4		360	0.6	12	6	17
18	353		14	22		300	4.2	68	20	18
19	354		8	28		600	7.9	90	22	19
20	355		10	16		160	4.2	40	16	20
21	356		10	12		140	3.7	36	18	21
22	357		10	24		240	4.6	50	22	22
23	358		8	16		160	6.1	32	20	23
24	359		8	20		180	6.3	32	16	24
25	360	-	4	10		60	1.8	22	10	25
26	361	-	4	12		160	4.2	30	20	26
27	362		10	36		240	>10.0	60	28	27
28	363		0	12		40	2.6	26	14	28
29	364	-	1	4		100	2.7	22	16	29
30	365		8	10		120	3.1	26	16	30
31	366		10	18		120	7.5	36	16	31
32	367	-	12	64		680	7.7	148	34	32
33	368	-	10	16		60	2.0	32	12	33
34	369	-	20	26		360	7.4	48	24	34
35	370	-	16	20		320	3.7	70	22	35
36	371	-	12	26		280	5.5	176	34	36
37	372	-	10	24		120	3.9	48	14	37
38	373	-	10	26		280	5.2	74	24	38
39	374	-	6	24		200	2.2	70	20	39
40	G 22		56	260		240	2.1	120	36	40

COMMENT:

DATE SAMPLES RECEIVED

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rt 4118 AMAX EXPLORATION INC. ANALYTICAL REPORT 7

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Sept 1974 TYPE SAMPLES Soil

OJECT order # 2029 LOCATION KITSALT 630 D

EQUESTED BY H. MEIXNER DISPOSITION OF REJECTS

No.	Sample	pH	Mo ✓	Cu ✓	Ni		Mn ✓	Fe ✓		Zn ✓	Pb ✓		No.
01	4DMS 375		12	30			320	5.4		68	36		01
02	376		12	18			320	5.6		132	48		02
03	377		12	20			160	5.6		36	18		03
04	378		6	28			80	3.7		40	20		04
05	379		4	32			160	3.9		180	24		05
06	380		2	12			560	8.9		114	18		06
07	381		10	4			60	1.2		14	20		07
08	382		12	30			840	4.3		120	36		08
09	383		6	8			40	1.7		16	8		09
10	384		6	12			180	6.0		46	16		10
11	385		6	20			200	3.5		54	12		11
12	386		8	20			240	4.4		52	12		12
13	387		8	8			80	2.0		20	10		13
14	388		10	18			26000	5.9		44	16		14
15	389		8	28			36000	>10.0		66	260		15
16	390		4	16			160	1.6		20	20		16
17	391		10	16			240	6.9		28	16		17
18	392		8	22			200	3.4		30	34		18
19	393		10	16			520	4.6		100	20		19
20	394		10	18			240	5.6		44	22		20
21	395		16	8			80	2.6		16	24		21
22	396		26	14			160	5.5		36	24		22
23	397		8	8			200	3.9		32	16		23
24	398		8	8			120	4.4		34	20		24
25	399		6	8			960	3.3		64	20		25
26	400		6	20			160	4.4		36	16		26
27	401		8	26			460	4.7		60	24		27
28	402		0	14			180	4.7		36	16		28
29	403		4	12			240	1.6		24	8		29
30	404		4	18			120	5.2		30	16		30
31	405		6	8			40	0.4		12	12		31
32	406		10	24			320	6.6		40	20		32
33	407		6	20			160	4.2		46	18		33
34	408		18	18			300	4.8		38	28		34
35	409		14	20			260	5.3		40	24		35
36	410		6	12			100	3.8		24	16		36
37	411		14	12			160	3.8		40	24		37
38	412		32	22			160	6.4		36	20		38
39	413		16	26			400	5.8		56	22		39
40	C+26		8	24			400	2.1		32	[illegible]		40

COMMENT:

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Cent. 418

AMAX EXPLORATION INC. ANALYTICAL REPORT

(8)

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Sept 1974 TYPE SAMPLES Soil

PROJECT ~~Amax #~~ 2029 LOCATION KITSALT

REQUESTED BY H. MEITNER DISPOSITION OF REJECTS

No.	Sample	pH	Mo ✓	Cu ✓	Ni		Mn ✓	Fe ✓		Zn ✓	Pb ✓			No.
01	4DMS 414		6	14			240	5.2		32	16			01
02	415		6	24			220	5.8		44	20			02
03	416		30	24			360	5.5		50	36			03
04	417		10	4.0			1960	4.8		120	140			04
05	417		18	12			200	5.8		28	30			05
06	419		2	6			160	1.4		22	24			06
07	420		2	12			2180	2.6		36	10			07
08	421		6	8			80	3.6		20	16			08
09	422		6	4			40	1.2		12	16			09
10	423		16	8			120	5.1		20	18			10
11	424		20	20			240	4.5		52	24			11
12	425		12	4			60	0.5		12	14			12
13	426		6	4			40	0.4		10	18			13
14	427		16	8			80	0.5		10	22			14
15	428		10	12			240	2.2		36	18			15
16	429		10	6			80	0.9		10	14			16
17	430		14	20			5200	3.4		64	30			17
18	431		10	8			60	0.5		10	20			18
19	432		14	22			240	7.3		36	20			19
20	433		8	10			100	2.6		22	10			20
21	434		6	16			2240	5.3		94	20			21
22	435		14	30			460	2.7		130	46			22
23	436		52	44			1320	1.4		52	30			23
24	437		8	8			200	2.1		24	20			24
25	438		4	6			60	0.4		14	14			25
26	439		4	6			80	0.5		16	20			26
27	440		4	8			120	1.4		28	24			27
28	441		14	38			8000	6.8		240	84			28
29	442		12	26			560	6.1		54	40			29
30	443		14	16			240	8.0		46	18			30
31	444		6	10			200	2.0		40	20			31
32	445		6	2			120	1.2		44	14			32
33	446		8	2			60	0.5		12	24			33
34	447		8	10			240	3.2		38	26			34
35	448		12	16			240	5.8		44	36			35
36	449		8	4			260	1.3		18	12			36
37	450		12	16			180	2.4		32	24			37
38	451		12	8			200	3.7		36	32			38
39	452		8	12			80	2.8		18	22			39
40	C 27		24	264			3100	1.1		>400	240			40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

(9)

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

DATE Sept 1974 TYPE SAMPLES Soil

PROJECT Order # 2029 LOCATION KITSAULT 630 D

REQUESTED BY H. MEIXNER DISPOSITION OF REJECTS

No.	Sample	pH	Mo ✓	Cu ✓	Ni		Mn ✓	Fe % ✓		Zn ✓	Pb ✓			No.
01	HDMS 453		10	22			180	9.0		36	18			01
02	454		.8	18			220	6.6		36	20			02
03	455		6	10			80	0.5		10	12			03
04	456		6	8			100	2.9		24	14			04
05	457		6	8			260	2.8		14	10			05
06	458		18	20			280	4.2		44	22			06
07	459		8	24			140	3.4		32	20			07
08	460		8	20			180	7.0		32	18			08
09	461		10	12			40	1.1		20	14			09
10	462		14	20			120	4.3		32	16			10
11	463		6	12			60	0.5		14	12			11
12	464													12
13	464		8	2			10	0.2		4	10			13
14	465		4	8			120	1.2		10	14			14
15	466		4	46			3700	3.8		24	28			15
16	467		6	16			200	2.8		22	24			16
17	468		8	8			160	1.5		12	12			17
18	469		20	14			200	9.4		20	46			18
19	470		20	6			80	1.4		12	20			19
20	471		6	8			880	2.7		36	16			20
21	472		6	14			160	1.7		12	10			21
22	473		14	4			60	0.6		8	10			22
23	474		4	34			60	0.5		12	20			23
24	475		28	8			40	1.0		12	16			24
25	476		6	10			60	2.1		16	8			25
26	477		4	12			40	0.4		14	10			26
27	478		16	14			240	3.6		76	34			27
28	479		2	6			40	0.7		10	24			28
29	480		18	4			40	0.6		8	18			29
30	481		14	4			80	0.5		8	16			30
31	482		4	4			80	0.5		16	8			31
32	483		10	20			2500	5.1		52	40			32
33	484		6	8			80	7.4		32	12			33
34	485		10	20			160	6.0		44	36			34
35	486		8	6			60	0.5		10	16			35
36	487		4	26			140	0.7		16	16			36
37	488		2	16			12400	1.3		32	14			37
38	489		4	26			16400	3.0		48	18			38
39	490		6	6			120	0.8		16	12			39
40	G-21		12	>400			220	4.0		192	52			40

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AMAX EXPLORATION INC. ANALYTICAL REPORT

BURNABY LABORATORY - 2225 SPRINGER AVE. - BURNABY 2, B.C.

(13)

TE Sept 1974 TYPE SAMPLES Soil

ROJECT - Order # 2029 LOCATION KITSALT 630 D

REQUESTED BY W. MEIXNER DISPOSITION OF REJECTS

No.	Sample	pH	Mo ✓	Cu ✓	Ni		Mn ✓	Fe ✓		Zn ✓	Pb ✓			No.
01	4DMS 491	-	6	10			160	0.7		24	16			01
02	492		2	4			160	1.0		18	14			02
03	493	-	2	4			180	0.9		28	16			03
04	494	-	4	4			160	0.8		18	50			04
05	495	-	10	22			1000	4.4		244	36			05
06	496	-	6	22			27000	>10.0		200	34			06
07	497	-	4	8			160	3.5		16	94			07
08	498	-	2	8			120	1.4		16	12			08
09	499	-	2	6			280	1.5		16	10			09
10	500	-	4	20			60	0.8		22	12			10
11	511	-	16	16			280	3.7		50	26			11
12	512	-	6	36			160	6.2		56	24			12
13	513	-	30	28			8200	>10.0		64	106			13
14	514	-	10	18			280	4.6		64	32			14
15	515	-	8	24			260	3.6		76	34			15
16	516	-	2	60			1260	8.4		128	84			16
17	517	-	12	20			100	6.0		28	70			17
18	518	-	10	20			160	2.4		50	40			18
19	519	-	8	20			360	3.8		44	36			19
20	520	-	6	14			80	1.3		28	30			20
21	521	-	22	20			2200	4.8		88	52			21
22														22
23														23
24														24
25														25
26														26
27														27
28														28
29														29
30														30
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37														37
38														38
39														39
40														40

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Procedures for Collection and Processing of Geochemical Samples

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

Amax Exploration, Inc.
Vancouver Office.

September 1970

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 100 mls are sampled and placed in a clean, screw sealed, polythene bottle. Observations are made at each site regarding the environment and nature of the sample.

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.

Rossbacher Laboratory
GEOCHEMICAL ANALYSTS & ASSAYERS

2225 S. SPRINGER AVE.,
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

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 $Hx1O_3$ 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 8 #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, 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, 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

Mn Geochemical AA Setting

Lamp Multi element Ca, 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

Mo Geochemical 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 NaCH, 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 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/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% HCl

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

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 280

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

1000 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 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 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 read 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 $\frac{1}{2}$ 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 1.2 mls isopropyl ether, shake for 1 minute, and allow phases to separate
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.

This 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 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 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 - CONTRACTOR INVOICES

VANC UVER ISLAND HELICOP ERS LTD.

P.O. BOX 2095 SIDNEY, BRITISH COLUMBIA V8L 3S6 TELEPHONE 656-3987

DATE ____________

In Account With

REFERENCE ____________

FLYING SERVICE FOR MONTH OF ____________ 19__
AS PER ATTACHED FLIGHT INVOICES.

HELICOPTER TYPE ____________ REG. No. C.F. ____________

BASE OF OPERATION ____________

BALANCE FORWARD	
____ HOURS @ $____ PER HR	$
____ HOURS @ $____ PER HR	
____ HOURS V I H. FUEL @ $____ PER HR.	
MINIMUM CHARGES	
CREW EXPENSES	
ADDITIONAL CHARGES	
TOTAL CHARGES	$

APPROVED		
Project	Exp. Code	Amount
630	8684	3668.44
36	49	SEP 19 '74

TERMS: 30 DAYS NET

Interest at 1½% per month (18 per cent per annum) charged on overdue accounts.

This company complies with the CODE OF ETHICS of the Helicopter Association of America.

VAN OUVER ISLAND HELICOPTERS LTD.

P.O. BOX 2095 SIDNEY, BRITISH COLUMBIA V8L 3S6 TELEPHONE 656-3967

DATE _____

In Account With

REFERENCE _____

FLYING SERVICE FOR MONTH OF _____ 19____
AS PER ATTACHED FLIGHT INVOICES.

HELICOPTER TYPE _____ REG. No. C.F. _____

BASE OF OPERATION _____

BALANCE FORWARD	
_____ HOURS @ $_____ PER HR.	$
_____ HOURS @ $_____ PER HR.	
_____ HOURS V.I.H. FUEL @ $_____ PER HR.	
MINIMUM CHARGES (IF APPLICABLE)	
CREW EXPENSES	
ADDITIONAL CHARGES	
TOTAL CHARGES	$

APPROVED DATE

Project	Exp. Code	AMOUNT
630	8684	2178.14

C 3692 OCT 1 74

TERMS: 30 DAYS NET

Interest at 1½% per month (18 per cent per annum) charged on overdue accounts.

This company complies with the CODE OF ETHICS of the Helicopter Association of America.

Rossbacher Laboratory

GEOCHEMICAL ANALYSTS & ASSAYERS

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

AMAX EXPLORATION INC.

601-535THURLOW TRELT

VANCOUVER, B.C.

project 630-D, order #2029

DATE ~~Nov. 15, 1974~~

INVOICE NO. ~~4130~~

CERTIFICATE NO. ~~4132~~

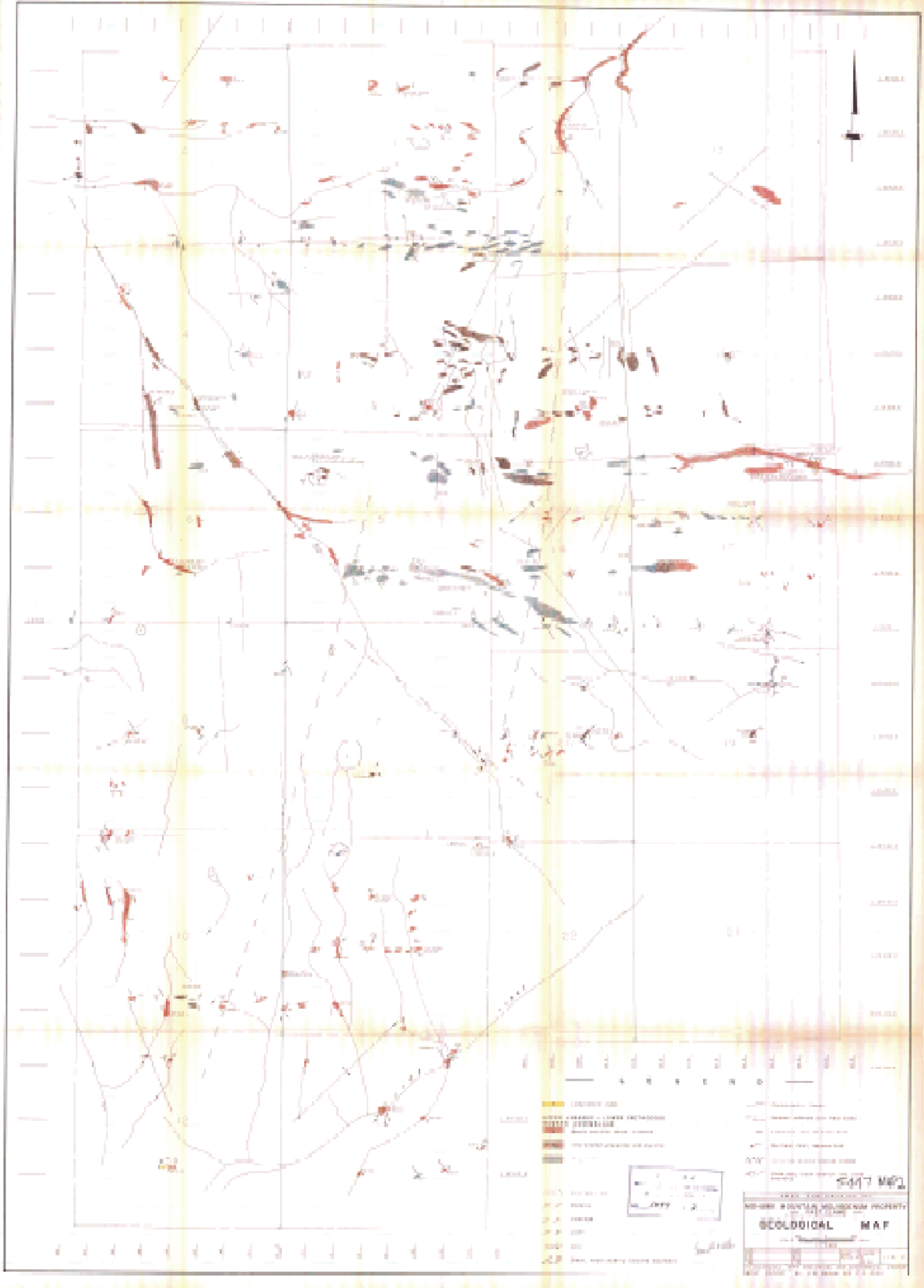
ITEM	DESCRIPTION	SUB-TOTAL	TOTAL
~~539~~ 536	Geochem. analysis, 6 elements, @ $ 2.50	1340.00 ✓	
525	" prep. 0.10	$ ~~1317.50~~ 52.50 ✓	
~~14~~ 17	rock prep. 0.75	~~10.50~~ 12.75 ✓	
44	Water analysis , Mo 1.00	44.00 ✓	
44	" " , Cu 1.00	44.00 ✓	
12	" " , Mn 1.00	12.00 ✓	
12	" " , Zn 1.00	12.00 ✓	
44	pH analysis , 0.75	33.00 ✓	
			1550.25 ✓
			$ ~~1555.00~~

ADD & EXT CORRECT
APPROVED [signature] DATED 11/19/74

PROJECT	ACCOUNT # OR	SUB ACCT.	AMOUNT
630	8691		1550.25

~~CK~~ 3880 NOV 21 '74

TERMS – NET 30 DAYS


LEGEND
GEOLOGICAL MAP