

1978 ASSESSMENT REPORT

TITLE: DIAMOND DRILLING REPORT,
KITSAULT PROPERTY

CLAIMS: KENNCO ACCESS 20, 21, 22, 23, 24,
25, 26, 27, ACCESS 2, A.C. No. 27
FRACTION, and ALICE

MINING DIVISION: SKEENA MINING DIVISION

NTS LOCATION: NTS 103 P/13 (6 W)

LATITUDE AND
LONGITUDE: 55° 26' N. and 129° 27' W.

OWNER AND
OPERATOR: CLIMAX MOLYBDENUM CORPORATION OF
BRITISH COLUMBIA, LIMITED

AUTHOR: ROGER C. STEININGER

DATE SUBMITTED: OCTOBER 17, 1978

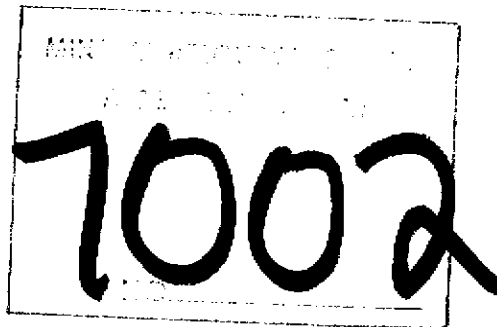


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INTRODUCTION

Location and Access

The Kitsault property is approximately four miles south of the town of Alice Arm and two miles south of the Kitsault town site. Access is by road from Kitsault to the open pit and by helicopter to Mohawk Mountain (Figure 1).

Physiography

The claims are between sea level and 2,500 feet elevation. Upper elevations are either thickly wooded or open swampy ground. At lower elevations tree and bush cover is extremely dense. Slopes are generally steep; deeply incised gulleys are common in the north and east parts of the claim group.

History

The Kennco Access, Access, and A.C. Fr. claims were originally owned by B.C. Molybdenum, Ltd. Climax Molybdenum Corporation of British Columbia, Limited purchased these claims in 1973. The Alice claim was staked for Climax in the fall of 1977.

The area is of interest for its known and potential molybdenum mineralization.

SCOPE OF PRESENT WORK

Two NQ-BQ diamond core holes were drilled into the claims (Figure 2). Hole LC 78-4 is 394.4 m long and LC 78-5 is 585.2 m long.

DRILLING RESULTS

Hole LC 78-4 was collared vertically, but gradually flattened to a bottom bearing of N.38°E. and an inclination of -27° (survey data in Appendix B). The collar location shown on Figure 2 is at an elevation of approximately 2,450 feet above sea level. The hole was drilled to a NQWL size from 0 to 280 feet (85.3 m) and a BQWL size from 280 to 1,294 feet (394.4 m). Drilling started on August 1, 1978 and was completed on August 18, 1978. A statement of costs for this drilling is in Appendix C.

Because hole LC 78-4 flattened severely, hole LC 78-5 was drilled approximately 10 feet southwest. Hole 78-5 was collared vertically, and had a bearing of N.28°E. and an inclination of -61° at the bottom (survey data in Appendix B). The hole was drilled to a BQWL size for its entire length (585.2 m). Drilling started on August 19, 1978 and was completed on September 9, 1978. A statement of costs for this drilling is in Appendix C. The drill bill shown labels this hole as LC 78-4B, which is incorrect, because the bill should identify the hole as LC 78-5.

Drill hole LC 78-4 was collared in graywacke members of the Bowser Lake Group. The entire hole consists of alternating layers of

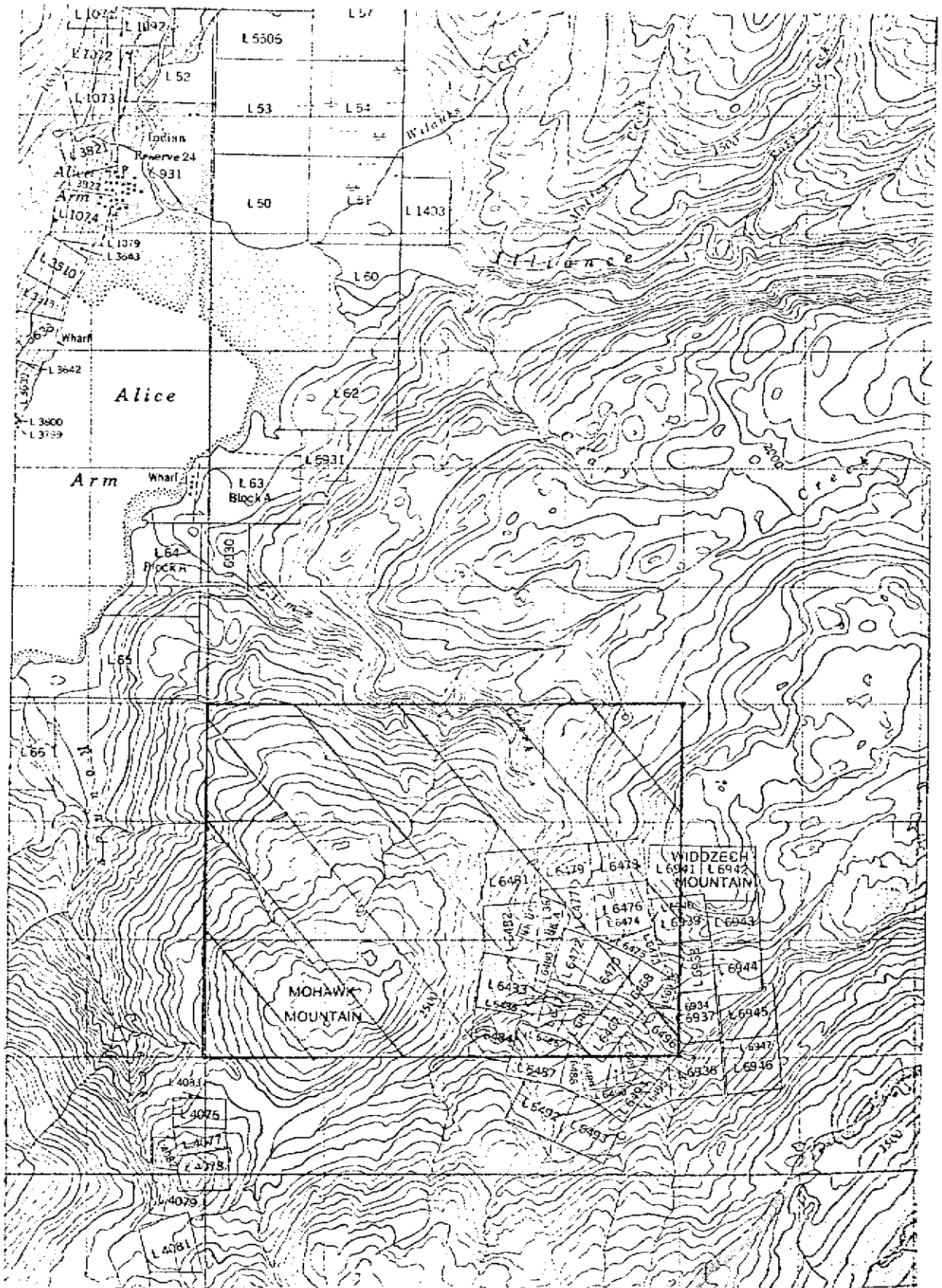


Figure 1. Approximate region of interest shown by striped area. Map is a portion of the 1:50,000 Aiyansh sheet NTS 103 P/6. North to top.

graywacke, micrograywacke, and argillite. Individual layers may vary from a few centimeters to as much as 20 m thick. Contacts between the units are sharp and cut the core axis at angles of 45° to 60° . Numerous small faults and fracture zones are common through the drill hole, but the amount of movement could not be determined. Several narrow porphyry dykes and one lamprophyre dyke were intersected in the lower part of the hole. The only mineralization encountered was 1- to 5-mm-wide calcite veins and rare 1-cm- to 1-m-wide barren quartz veins. A detailed geologic log is in Appendix A.

Drill hole LC 78-5 encountered the same units of the Bowser Lake Group mineralization and structural conditions identical to those in hole LC 78-4. Porphyry dykes are more abundant in this hole than in LC 78-4. A detailed geologic log is in Appendix A.

These holes were designed to test for mineralization under Mohawk Mountain and to supply ground-condition information along the line of a proposed tailing disposal tunnel. Results from these two drill holes have satisfied these objectives.

Reginald Stearns

AUTHOR'S QUALIFICATIONS

Roger C. Steininger

Education

B.S. - Geology, 1964, Western Michigan University
M.S. - Geology, 1966, Brigham Young University
Ph.D. - Geology, in progress, Colorado State University

Professional Experience

1967-1971 Associate Geologist to Senior Geologist,
Climax Mine.

1971 to
present Senior Project Geologist, Climax Molybdenum
Company. Responsible for exploration and
evaluation of molybdenum and tungsten prop-
erties throughout North America.

CLAIM STATUS

<u>Claim Name</u>	<u>Record</u>	<u>Work Due Date</u>
Kennco Access 20	22372	Sept. 16, 1982
Kennco Access 21	22373	Sept. 16, 1982
Kennco Access 22	22374	Sept. 16, 1982
Kennco Access 23	22375	Sept. 16, 1982
Kennco Access 24	22376	Sept. 16, 1982
Kennco Access 25	22377	Sept. 16, 1982
Kennco Access 26	22378	Sept. 16, 1982
Kennco Access 27	22379	Sept. 16, 1982
A.C. No. 27 Fraction	27962	Sept. 29, 1982
Access 2	19309	July 6, 1982
Alice	463	Oct. 19, 1978

APPENDIX A

DRILL LOGS FOR DRILL HOLES LC 78-4 and LC 78-5

- 0 - 20' Overburden.
- 20 - 30' Graywacke, moderately fractured throughout, no evidence of faulting.
- 30 - 37' Argillite. Contact between argillite and graywacke is sharp and cuts the CA at 45° . Fault zone from 32 to 37 ft, consisting of broken rock, slicks, and gouge.
- 37 - 112' Graywacke with minor interbedded argillite. Argillite layers up to 1.5 feet across have sharp contacts with the graywacke and cut the CA at about 45° . In places the graywacke grades into micrograywacke. At 62 ft a 1-cm-wide barren quartz vein cuts the CA at 30° . Fault zone continues from 37 to 42 ft. Fault zone from 60 to 61.5 ft consisting of strongly fractured rock and minor slicks. Moderately fractured zones from 85 to 93 ft and 106 to 112 ft. Sample of graywacke from 71.5 ft.
- 112 - 124' Argillite with minor interbedded graywacke. Sharp contact between graywacke and argillite at 45 to 50° to CA. Rock is strongly fractured from 120 to 124 ft, no good evidence of faulting within this zone.
- 124 - 140' Graywacke. Graywackes and argillites contain numerous gash-calcite veins, although less abundant than in 78-3. Rock is moderately fractured from 129 to 130 ft and 134 to 138.5 ft.
- 140 - 243' Argillite with minor interbedded micrograywacke. Fault zone from 140 to 148 ft consisting of strongly broken rock, minor gouge, minor slicks, and some quartz filling. Strongly broken zone from 218 to 222 ft. Contacts between micrograywackes and argillites are sharp, and occur between 40 and 50° to the CA, parallel to the bedding seam, which is also 40 to 50° to CA. Argillite sample taken at 210 ft.
- 243 - 312' Micrograywacke with minor interbedded argillite. Minor fracturing at 265 to 270 ft. Bedding within the micrograywacke is highly contorted, suggesting some turbid-type action when the sediments were originally deposited. Contacts between micrograywacke and argillite are sharp, 50° to CA, and are not contorted.
- 312 - 394' Argillite with minor interbedded micrograywacke. Weakly fractured from 338 to 353 ft. Several 1- to 5-cm-wide strongly fractured zones scattered throughout the interval.
- 394 - 440' Micrograywacke with minor interbedded argillite. Core is moderately broken from 413 to 429 ft. Calcite-gash veins still present throughout the interval on the order of 2 per foot, varying in size from hairline to 3 mm wide, and cut the CA at random angles.
- 440 - 548' Argillite with minor interbedded micrograywacke. Strongly fractured zone from 495 to 506 ft and 529 to 538 ft.
- 548 - 625' Micrograywacke with minor interbedded argillite. Within each of the last few intervals, the interbedded variety that makes up the minor rock type consists of layers from 6 inches to 3 feet thick. Contacts between all varieties are sharp. Bedding in this interval is approximately 30° to CA. The contacts between rock types are parallel to bedding.
- 625 - 660' Argillite with minor interbedded micrograywacke. Contacts between the units and bedding are at 30° to CA. From 641 to 642 ft and from 657 to 659 ft is moderately shattered rock.
- 660 - 739' Micrograywacke grading into graywacke in places, with minor interbedded argillite. Calcite-gash veins slightly more abundant in the argillite zone. Micrograywacke still contains contorted bedding. An example of this at 710 ft. From 692 to 694 ft and from 710.5 to 716 ft is moderately shattered rock. Possible fault zone 6 inches wide at 715 ft, with broken rock and minor gouge. Moderately broken rock from 734.5 to 739 ft.

739 - 741' Fine-grained porphyry dike(?) consisting of 20 percent ferro-mag phenocrysts 0.5 to 2 mm across in a medium-gray fine-grained groundmass. Contacts between the porphyry and sedimentary rock at 80° to CA. Possible weak argillic alteration of the groundmass. Sample at 741.5 ft.

741 - 804' Micrograywacke with interbedded argillite. Cut by a few barren quartz veins 5 mm wide that cut the CA between 45 and 60°.

804 - 825' Argillite, moderately broken from 810 to 815 ft.

825 - 929' Micrograywacke with minor interbedded argillite. Contacts between argillite and micrograywacke zones are approximately 50° to CA. From 909 to 911 ft is a moderately broken zone.

929 - 938' Argillite.

938 - 946' Quartz vein with numerous patches of argillite. This vein may be a fault filling. The argillite within the vein appears to be strongly altered, possibly fault gouge.

946 - 998' Argillite with minor interbedded micrograywacke and numerous 5-mm- to 3-cm-wide quartz veins, many of which have argillite fragments and seams throughout. Fault zone from 948 to 965 ft consisting of strongly broken rock, gouge, and slicks. Some gouge and more altered argillite appear similar to the material within the quartz veins.

998 - 1010' Porphyry dike similar to the one described further uphole. Rock is competent within the dike, although several calcite-gash veins are still present. Sample taken at 1002 ft.

1010 - 1040' Argillite cut by several 5-mm- to 2-cm-wide quartz veins, as well as numerous hairline to 3-mm-wide calcite-gash veins. Weakly broken zone from 1027 to 1029 ft.

1040 - 1074' Graywacke massively bedded throughout.

1074 - 1082' Argillite. Contact between the graywacke and argillite at about 20° to CA.

1082 - 1181' Graywacke with minor interbedded argillite. In places the graywacke grades into micrograywacke. Rock is moderately broken from 1127 to 1129 ft and from 1142 to 1176 ft. At 1133 to 1134 ft a porphyry dike similar to those described uphole. At 1152.3 ft a 6-inch porphyry dike similar to those above.

1181 - 1186' Lamprophyre dike highly altered, consisting of sand, from 1181.5 to 1185 ft.

1186 - 1223' Argillite, moderately broken throughout the interval.

1223 - 1231' Porphyry dike similar to those uphole, except that it contains 15 percent subhedral plagioclase 1 to 3 mm across. Sample taken at 1225 ft.

1231 - 1284' Micrograywacke with interbedded argillite. The entire interval is weakly to moderately broken.

1284 - 1291' Argillite, weakly broken throughout.

END OF HOLE

- 0 - 20' Overburden.
- 20 - 190' Graywacke with interbedded argillite layers. Graywacke locally grades into micrograywacke. Calcite-gash veins are most prevalent in the argillite sequences. From 60 to 104 ft the core is moderately broken, possibly fault related. Several zones contain intensely fractured rock, minor gouge, minor slicks, and possibly some quartz vein filling. 112 to 112.4 ft, quartz vein with abundant gouge material - also probably a fault filling. From 120 to 130 ft rock is moderately broken. From 149 to 160 ft weak to moderate breaking. From 180 to 187 ft weak to moderately shattered rock with some quartz veining. Possibly this is another fault zone.
- 190 - 308' Argillite with minor interbedded micrograywacke. Calcite-gash veins are most abundant in the argillite layers consisting of hairline to 3-mm-wide veins. At 281.6 ft a 5-cm-wide fault zone consists of gouge.
- 308 - 401' Micrograywacke contains numerous zones of contorted bedding, suggesting turbidity-type deposition. Core is very competent throughout the interval.
- 401 - 516' Interlayered argillite and micrograywacke. Bedding is approximately 30° to CA. Individual layers range from 6 inches to 3 feet wide. Competency decreases slightly within the argillite zones. Several intervals of weak shattering as follows: 415 to 420 ft, 425 to 431 ft, 474 to 487 ft, 490 to 493 ft, and 512 to 513 ft.
- 516 - 601' Micrograywacke grades in places into graywacke. Bedding is 30 to 40° to CA. Moderate shattering from 564 to 570 ft and 592 to 593 ft.
- 601 - 706' Argillite with minor interbedded micrograywacke. Moderately broken zones from 610 to 625 ft, 660 to 670 ft, and 701 to 703 ft.
- 706 - 754' Graywacke grades in places into micrograywacke. Bedding is 30° to CA. Sample taken at 736 ft.
- 754 - 770' Argillite. Moderately broken from 754 to 762 ft.
- 770 - 841' Graywacke with minor interbedded argillite. Moderately fractured from 810 to 830 ft. This area also contains slightly more argillite zones.
- 841 - 865' Argillite, weakly shattered throughout.
- 865 - 1016' Graywacke to micrograywacke with several zones of argillite and, in places, what appear to be fragments of argillite. Within the areas that contain fragments of argillite bedding is contorted, again suggesting some kind of turbidity-type deposition. Strongly fractured from 892 to 900 ft, 914 to 916 ft, 954 to 957 ft, 982 to 983 ft, and 1014 to 1016 ft. Bedding is approximately 30° to CA.
- 1016 - 1080' Micrograywacke, moderately broken from 1070 to 1072 ft.
- 1080 - 1106' Graywacke cut by several 5-mm- to 2-cm-wide quartz veins, moderately fractured from 1080 to 1092 ft.
- 1106 - 1154' Argillite. Entire interval is weakly to moderately broken. Quartz vein from 1148 ft to end of interval with numerous argillite-gouge seams throughout, some of which appear to be strongly chloritized.
- 1154 - 1292' Graywacke, moderately shattered from 1168 to 1201 ft. From 1200 to 1201 ft quartz vein with fragments of altered graywacke and argillite, possibly a fault filling. Moderately broken from 1260 to 1262 ft and 1273 to 1278 ft.
- 1292 - 1293' Porphyry dike similar to the ones described in LC 78-4 cuts the CA at 30°.
- 1293 - 1386' Argillite with interbedded micrograywacke. Core is moderately broken 1350 to 1356 ft and 1360 to 1366 ft.

1386 - 1479' Graywacke and micrograywacke grade into each other throughout the interval. Bedding at 45° to CA. Several 1- to 3-cm-wide strongly broken zones throughout the interval. From 1479 to 1479.6 ft a porphyry dike cuts the CA at 40°, and contains 30 percent subhedral to angular feldspar phenocrysts 1 to 4 mm across and 10 percent anhedral to subhedral ferro-mag phenocrysts 1 to 2 mm across in a medium- to dark-gray fine-grained groundmass.

1478.6-1483' Micrograywacke.

1483 -1485' Porphyry dike similar to the ones described further uphole at 1291 ft. Sample taken from the center of this dike.

1485 -1599' Micrograywacke with interbedded argillite. Bedding cuts CA at about 45°. Several calcite-gash veins throughout the interval, but more abundant in argillite.

1599 -1606' Mafic porphyry dike similar to others logged in this hole and in 78-4. Sample taken at 1604 ft.

1606 - 1719' Interval of argillite cut by numerous mafic porphyry dikes as follows: 1614 to 1616 ft, 1620 to 1622 ft, 1626 to 1633 ft, 1635 to 1638 ft, 1639 to 1640 ft, 1640.2 to 1640.6 ft, 1641 to 1646 ft, 1649 to 1651 ft, 1654 to 1655 ft, 1656 to 1659.5 ft, 1663 to 1670 ft, 1671 to 1684 ft, 1688 to 1696 ft, and 1705 to 1708 ft. Core is moderately broken from 1607 to 1618 ft, 1635 to 1636 ft, 1638 to 1639 ft, 1652 to 1656 ft, 1678 to 1678.5 ft, 1682 to 1688 ft, and 1700 to 1719 ft. Dike sample taken at 1644 ft and at 1674 ft.

1719 -1797' Porphyry dike looks to be a composite dike of two varieties; the older is a diorite dike with feldspar phenocrysts similar to the one described at 1479 ft. It consists of approximately 20 percent subhedral to angular feldspar phenocrysts 2 to 5 mm across and 10 percent subhedral ferro-mag minerals 1 to 3 mm across. This dike is cut by the mafic porphyry dike described in the last interval. These crosscutting mafic porphyry dikes vary in size from 1 cm to as much as 10 cm. Sample of this crosscutting relationship taken at 1742 ft. Moderately broken zones from 1724 to 1735 ft and 1786 to 1794 ft.

1795 -1810' Interlayered micrograywacke and argillite. Bedding approximately 50° to CA.

1810-1830.3' Diorite similar to that described above.

1830.3-1884' Interlayered argillite and micrograywacke. Weak to moderate fracturing throughout.

1884 -1898' Igneous dike consisting of 5 percent anhedral feldspar grains 3 to 5 mm across in a medium-grained groundmass of feldspar and mafic minerals approximately 1 mm across. Sample taken at 1886 ft.

1898 -1920' Interlayered micrograywacke and argillite. Moderately broken from 1898 to 1902 ft.

END OF HOLE

APPENDIX B

SURVEY DATA FOR DRILL HOLES LC 78-4 and LC 78-5

LC 78-4

<u>Depth</u>	<u>Inclination</u>	<u>Bearing</u>
500	-77 ^o	N.42 ^o E.
601	-67 ^o	N.38 ^o E.
624	-66 ^o	N.38 ^o E.
701	-56 ^o	N.37 ^o E.
756	-52 ^o	N.38 ^o E.
801	-46 ^o	N.37 ^o E.
901	-37 ^o	N.37 ^o E.
949	-36 ^o	S.75 ^o E.
1021	-32 ^o	N.45 ^o E.
1196	-27 ^o	N.38 ^o E.

LC 78-5

<u>Depth</u>	<u>Inclination</u>	<u>Bearing</u>
101	-88 ^o	N.31 ^o E.
201	-88 ^o	N.31 ^o E.
374	-86 ^o	N.36 ^o E.
487	-84 ^o	N.34 ^o E.
593	-84 ^o	N.36 ^o E.
751	-80 ^o	N.29 ^o E.
916	-78 ^o	N.29 ^o E.
1176	-74 ^o	N.29 ^o E.
1338	-71 ^o	N.29 ^o E.
1466	-67 ^o	N.29 ^o E.
1567	-65 ^o	N.29 ^o E.
1655	-64 ^o	N.30 ^o E.
1779	-64 ^o	N.29 ^o E.
1920	-61 ^o	N.28 ^o E.

APPENDIX C
STATEMENT OF COSTS



CAMERON McCUTCHEON DRILLING LIMITED

DIAMOND DRILLING CONTRACTORS

Telephone 253-5251
Telex: 01-54311

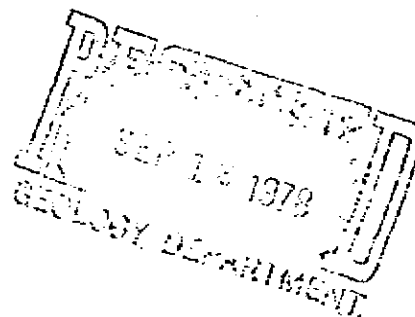
745 Clark Drive
Vancouver, B.C.
V5L 3J3

INVOICE NO. 12051

JOB NO. 355

SEPTEMBER 1ST, 1978

Climax Molybdenum Corp. of B.C. Ltd.
13949 West Colfax Avenue
Golden, Colorado
U.S.A. 80401



Attention: Mr. Roger Steininger

RE: SURFACE DRILLING AT ALICE ARM

HOLE #78-4	NW	0' -	24'	=	24'	CASING @ \$16.50	=	\$ 396.00
	NQ	24' -	280'	=	256'	CORING @ \$16.25	=	4,160.00
	BQ	280' -	1,000'	=	720'	CORING @ \$15.25	=	10,980.00
	BQ	1,000' -	1,294'	=	294'	CORING @ \$16.50	=	4,851.00
HOLE #78-4B	BW	0' -	20'	=	20'	CASING @ \$16.50	=	330.00
	BQ	20' -	1,000'	=	980'	CORING @ \$15.25	=	14,945.00
		1,000' -	1,500'	=	500'	CORING @ \$16.50	=	8,250.00
		1,500' -	1,603'	=	103'	CORING @ \$18.50	=	1,905.50

SITE COSTS	SCHEDULE "A"	5,890.50
SUPPLIES	SCHEDULE "B"	4,657.06
CREDITS	SCHEDULE "C"	(853.84)

\$55,511.22

DIRECT PAYMENT

PURCHASE ORDER NO. *3011*

DEPT. *ALICE*

DATE *9/12/78*

BY *R.E.S.*

AMOUNT *10 276-78-1 11000*

DESCRIPTION *BCU*

FINAL APPROVAL *[Signature]*

AUG 1978

KITSBLUET
LABOUR & EQUIPMENT

JOB # 355

Prepared By
Approved By

DATE	LABOUR	EQUIPMENT	
		STANDBY	OPERATING
Aug 1	48	14	
2	40	10	
3	—		
4	2		1
5	6		3
6	—		
7	—		
8	4		2
9	—		
10	4		2
11	—		
12	2		1
13	2		1
14	6		3
15	—		
16	2		1
17	—		
18	24		6
19	24	7	
20	2		1
21	3		1 1/2
22	1		1/2
23	1		1/2
24	3		1 1/2
25	12		6
26	34		17
27	—		
28	2		
29	12		6
30	—		
31	2		1
	236	31	55

LABOUR	236	HR @ 17.75	4189.00
EQUIPMENT - STANDBY	31	HR @ 11.00	341.00
- OPERATING	55	HR @ 15.00	825.00
			5355.00

Plus 10% 5355.00

5890.50

