

ANACONDA CANADA EXPLORATION LTD.



ASSESSMENT WORK REPORT
ON THE
GEOLOGY AND GEOCHEMISTRY
OF THE
CIRQUE 1-8 CLAIM GROUP
BENNETT LAKE AREA
NTS 105-D/3
60°02' N, 135°07' E
WHITEHORSE MINING DISTRICT
AUGUST 7 TO AUGUST 15, 1980

15

LATKELCO



by

GERALD G. CARLSON

October 16, 1980

090727

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This report has been examined by the Geological Evaluation Unit and is recommended to the Commission to be considered as representative work under Section 23 (4) Yukon Quartz Mining Act.

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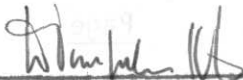
South Zone
Central Zone

Geological Maps

South Zone
Central Zone

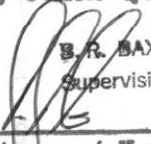
This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of

\$ 2,400.00




Resident Geologist or
Resident Mining Engineer

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



B. R. BAXTER
Supervising Mining Recorder

 Commissioner of Yukon Territory

CONCLUSIONS

A program of geological mapping and rock chip sampling was conducted within the CIRQUE 1-8 claim group on the south side of the west arm of Bennett Lake during the period August 7-August 15. Rock chip samples were analyzed for copper and molybdenum.

The geology is dominated by the Bennett Lake Cauldron Complex of Tertiary age. Mineralization is localized in a volcanic and tectonic breccia zone with acid igneous intrusive rocks adjacent to a ring dike on the north-east side of the complex. The mineralization consists of disseminated and fracture-controlled chalcopyrite, bornite and molybdenite with a variety of accessory minerals including magnetite, hematite, chlorite, epidote, quartz, calcite and minor gypsum and fluorite.

Geochemical results from the rock chip sampling program show disappointingly low values of copper and molybdenum. Comparison of chip and channel samples across the same face show very poor correlation. Difficulty of access and the shear vertical rock faces make any form of hand sampling suspect. The present sampling serves only to distinguish between mineralized and non-mineralized volcanic rocks.

RECOMMENDATIONS

The CIRQUE claim group remains a geologically interesting target. Results of the present rock chip sampling survey indicates sub-economic grades of copper and molybdenum; however, many difficulties were encountered in obtaining an accurate sample within the mineralized zone and mineralization is poorly exposed within the claim group. This suggests that a more thorough sampling program would be necessary in order to define the true grades and tonnage potential of the property. Improved sampling could be conducted using a plugger and trenching large samples from the vertical faces; however, for a more comprehensive picture of the true ore potential of the zone, a diamond drilling program would be necessary.

INTRODUCTION

The CIRQUE 1-8 claim group covers a Cu-Mo showing originally discovered in 1969. The showing is exposed on vertical faces of a series of nunataks exposed within a rapidly receding ice field on the south side of the West Arm of Bennett Lake, just west of Munroe Lake. A program of geological mapping and chip sampling (Carlson et al, 1970) outlined an area of approximately 150 m by 75 m of low grade Cu-Mo mineralization. Due to sampling difficulties on the vertical rock walls and the minimal exposure of the mineralized zone, a small drill program was recommended to provide a more accurate sample through this zone. The recommended program was not carried out and the original claims were eventually allowed to lapse.

Rapid melting of ice, with the resultant exposure of as much as 8 m below 1970 levels on the nunatak walls as well as extensive uncovering of lateral moraine boulders, some of which contain higher grade Mo mineralization in a granitic breccia host, led to the re-staking of the property in 1979. During the summer of 1980, the property was visited by an Anaconda field crew for the purpose of re-sampling the mineralized zone and locating the source of the higher grade Mo mineralization. This work was completed between August 7 and 15, 1980.

LOCATION AND ACCESS

The CIRQUE 1-8 claim group is located in the southern Yukon, 60 km due south of Whitehorse and 24 km. southwest of Carcross, at 60° 1.5' N latitude and 135° 07' W longitude, NTS sheet 105-D/3.

Present access to the property is by road from Whitehorse to Carcross, a distance of 70 km., and then by helicopter from Carcross to the property. The showing is 4 km. from Lake Bennett at an elevation of from 1400 to 2000 m, or approximately 1000 m above lake level. The White Pass and Yukon Route narrow gauge railway traverses the shore of Lake Bennett, approximately 12 km. from the claim group.

PERSONNEL

The following employees of Anaconda Canada Exploration Ltd. were directly involved in the field exploration program of the CIRQUE 1-8 claim group:

Name and Address	Position	Dates
Gerald G. Carlson 703-1045 Haro St. Vancouver, B.C.	Regional Exploration Manager Western Canada	Aug. 7 & 8 Aug. 15
Bruce Gemmell 2170 Ottawa West Vancouver, B.C.	Geologist	Aug. 7-15
Hardolph Wasteney 200-1500 W. Georgia St. Vancouver, B.C.	Geologist	Aug. 7-11
Bernie Marini 4369 Carson South Burnaby, B.C.	Field Technician	Aug. 7-15
Rick Zuran 2787 Avoncourt Way Ottawa, Ontario	Sampler	Aug. 7-15
Les Mann 73 St. George St. Toronto, Ontario	Sampler	Aug. 7-11

CLAIMS

During the present field work, claim posts in the central part of the claim group were located and tagged. Some of these are located in rather unstable locations, on melting ice or moving moraines, and will undoubtedly shift from their present location. The following lists the status of the claims:

Name	Grant No.	Owner	Expiry Date
CIRQUE 1-8 (incl.)	YA48211-218	R.G. Hilker	Sept. 14/80*

* Assessment work has been applied on the basis of the work described in this report.

GEOLOGY

Both the regional geology (Lambert, 1969; Wheeler, 1961) and local geology (Carlson, et al, 1970; Zimmer, 1970) have been described extensively.

The mineralization is localized along the northeastern perimeter of, and appears to be genetically associated with, the Tertiary Bennett Lake cauldron subsidence complex. This complex consists of the Eocene Skukum group, comprised mainly of rhyolite to dacite ash flow tuffs and breccias which are partly circumscribed by a rhyolitic ring dike.

The Skukum Group cuts and overlies the Cretaceous and Lower Tertiary Coast Plutonic Complex, consisting of intermediate to acid plutonic rocks, and enclosed pendants of Paleozoic Yukon Group metamorphic rocks.

The following is a description of the rocks encountered within the claim group as mapped by B. Gemmill during the present program:

Unit 7 - Mafic Dikes: these are dark green weathering, dark green to black basaltic dikes, ranging in width from 0.5 to 3 m and cutting all other rock types in the area. Local concentrations of disseminated pyrite and chalcopyrite were noted.

Unit 6 - Pink Granite/Quartz-Eye Porphyry: This is a pink to buff weathering fine grained granitic rock. Abundant pink feldspar and minor grey-white plagioclase were noted in the matrix, often enclosing rounded phenocrysts of quartz up to 2 mm diameter. Disseminated bornite and chalcopyrite, with minor molybdenite, are common but the most extensive mineralization in this unit is molybdenite, with quartz, along fractures.

This unit does not outcrop along the base of the cliffs. It was observed as boulders in moraine which are believed to have been derived from a sill-like body high on the northwest face of the South Zone.

Unit 5 - Andesite Breccia: This is a dark green to black brecciated rock of greater than 50 percent fine grained, andesitic matrix. Fragments are angular to subrounded, up to 5 cm. diameter and consist of hornblende monzonite, fine grained mafic to intermediate volcanics and subhedral quartz and plagioclase crystals. Only minor pyrite was observed in this unit.

Unit 4 - Andesite: This is a dark green weathering massive, highly fractured andesitic volcanic rock. The only mineralization observed included traces of disseminated pyrite.

Unit 3 - Volcanic Boulder Breccia: This breccia consists of angular to sub-rounded clasts of hornblende monzonite, pink quartz monzonite, fine grained mafic volcanics and Yukon Group quartz-biotite schist in a fine to medium grained dark green to black matrix. Chlorite, epidote and magnetite are common in the matrix. Clasts, which range from 4 mm or smaller quartz and feldspar crystals to 20 cm rock fragments, are poorly sorted and very closely packed. Fine grained, disseminated chalcopyrite, bornite and molybdenite occur throughout the matrix, and, to a lesser extent, fragments. Minor molybdenite also occurs along fracture faces and with pink quartz.

Unit 2 - Granite Breccia: This rock type consists of angular and sub-rounded fragments of shattered granite (Unit 1) in a chloritic and siliceous matrix similar in composition to Unit 3 but with less epidote and magnetite. The fragments, which range up to 10 to 15 cm. in diameter, have been strongly disrupted and are unsorted. Disseminated, fine grained chalcopyrite and bornite occur throughout the fragments and matrix. Copper mineralization also occurs in tiny veinlets which cut both the fragments and the matrix. Molybdenite occurs as disseminations and as coatings on fracture and shear faces.

Unit 1 - Shattered Granite: This is a medium grained, plutonic rock of monzonitic composition with about 20% hornblende and biotite. The unit is characterized by a multitude of hairline fractures. These fractures, from less than 1 mm to 5 cm in thickness, are filled with chlorite, epidote and minor magnetite. Disseminated, very fine grained chalcopyrite, bornite and molybdenite occurs throughout the blocks and along hairline fractures.

Lambert 1970 noted that country rocks are shattered and brecciated within 150 meters of the outer side of the ring dike complex. The origin of much of the brecciation within and adjacent to the mineralized zone could be related to this ring dikes feature, although the dike is some 600 meters distant from the breccia in this case.

Although epidote is present in many of the rock types, it occurs predominantly as an open space or fracture filling. Alteration of the igneous rocks is weak to non-existent. Hematite, magnetite, quartz, calcite and minor gypsum and fluorite are also observed in late fractures and along shear faces.

MINERALIZATION

The sulphide mineralization found consists of chalcopyrite, bornite and molybdenite with minor pyrite. It occurs within rock units 1, 2, 3 and 6 and was found to occur in four modes:

- (1) Fine disseminations throughout the rock types usually with a greater proportion in the matrix. Bornite and chalcopyrite are usually extremely fine grained.
- (2) Bornite plus chalcopyrite occurs in a fairly early system of fractures occasionally with vein quartz. These are observed as irregular stringers and blebs along hairline fractures.
- (3) Post mineralization shearing appears to have mobilized some of the minerals especially molybdenite and localized them along shear faces.
- (4) Concentrations of molybdenum occur along shear faces and with veins. This type of mineralization was found only in float and is particularly associated with Unit 6.

ROCK SAMPLING

Sampling of the rock face was carried out throughout the mineralized zone. Samples were collected over 2 m intervals along all accessible faces within this zone. Initial sampling consisted of duplicate channel and chip sampling; however, due to sampling difficulties only chip sampling was conducted over the majority of the area. A character hand specimen was collected for each sample.

Sample numbers are located on the accompanying sample location sketches. Analytical results are shown in the following table. Each sample was analyzed for Cu and Mo at the Bondar & Clegg laboratory in Whitehorse.

SAMPLE LISTING WEST TO EAST

Sample No. Chip (Channel)	Cu (ppm) Chip (Channel)	Mo (ppm) Chip (Channel)
1450	80	12
1449	206	18
1448	17	10
47	241	68
46	346	4
45	103	169
44	393	4
43	794	6
42	664	12
41	426	12
40	459	11
39	318	14
38	322	42
37	523	13
36	1521	19
34	759	331
33	1323	109
32	1475	112
31	844	46
30	1402	155
29	1043	40
28	481	74
27	112	48
26	185	28
25	702	16
24	557	33
23	1224	172
22	468	72
21	421	26
20	782	63
18	664	376
19	347	18
1417	469	55

Sample No. Chip (Channel)	Cu (ppm) Chip (Channel)	Mo (ppm) Chip (Channel)
1416 (1415)	363 (538)	8 (40)
1414 (1413)	281 (493)	49 (32)
1412 (1411)	222 (502)	24 (25)
1410 (1409)	351 (537)	6 (34)
1408 (1407)	333 (661)	12 (41)
1406 (1405)	366 (304)	36 (72)
1404 (1403)	805 (500)	122 (73)
1402 (1401)	461 (516)	22 (60)
1400 (1399)	202 (436)	21 (38)
1398 (1397)	643 (316)	39 (30)
1396 (1395)	242 (437)	133 (171)
1386 (1385)	577 (442)	75 (55)
1388 (1387)	366 (517)	78 (152)
1390 (1389)	(719)	(176)
1383 (1380)	1184 (336)	144 (110)
1384 (1381)		
(1382)		
1392 (1391)	735 (241)	148 (37)
1394 (1393)	1167 (661)	44 (109)
1451	456	15
52	454	12
53	236	4
54	444	18
55	651	190
56	460	121
57	532	22
4501	651	148
02	588	114
03	306	75
04	737	81
05	69	15
06	156	20
07	254	20
08	247	24
09	701	99
10	239	52
11	165	73
12	447	37
13	317	20
14	717	451
15	423	38
16	381	47
17	164	8
18	280	29
19	232	16
20	563	77

Sample No. Chip (Channel)	Cu (ppm) Chip (Channel)	Mo (ppm) Chip (Channel)
4521	286	132
22	498	50
23	493	84
24	224	8
25	658	74
26	806	122
27	1896	391
28	1018	417
29	597	51
30	481	16
31	463	29
32	176	25
33	382	44
34	92	16
35	286	20
36	219	12
37	101	16
38	82	4
39	66	2
40	59	3
41	61	4
42	101	3
43	104	5
44	21	1
45	29	2
46	128	6
47	87	2
48	152	8
49	132	6
50	118	11
51	80	9
52	32	2
53	187	4
54	80	3
55	178	2
56	107	7
57	56	17
58	102	15
59	113	3
60	103	12
61	26	3
62	40	2
63	17	2
64	16	2
65	28	4
66	16	2
67	20	3
68	16	2
69	9	2
70	14	2

As can be seen from the foregoing results, economic grade mineralization was not encountered during the present survey. It is also apparent from the comparison between the rock chip and channel samples across the same 2 metre sequences that there is very poor correlation between the two types of sample. The channel sample values are frequently higher than the equivalent chip sample values for both copper and molybdenum although this is not consistently true. The present sampling, as in the former program, has served to outline the area of average mineralization. However, for a true appraisal of the copper and molybdenum grades within the mineralized zone it appears that a bulk sample taken by blasting trenches in the vertical face would be necessary.

STATEMENT OF EXPENDITURES

Helicopter access	3,866.38
Salaries	2,730.59
Camp supplies	600.00
Geochemical analysis	<u>455.30</u>
TOTAL	7,652.27

The above expenditures were made between August 7 and 15, 1980, in carrying out the geological and geochemical exploration program on the CIRQUE 1-8 claim group as described in this report. Invoices, diaries and certificates of geochemical analysis are on file at the offices of Anaconda Canada Exploration Ltd., Suite 200 - 1500 West Georgia Street, Vancouver, B.C., Canada.

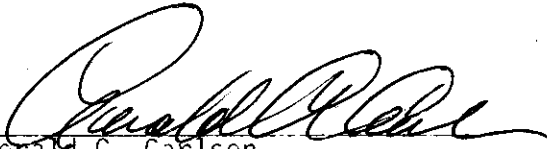

Gerald G. Carlson



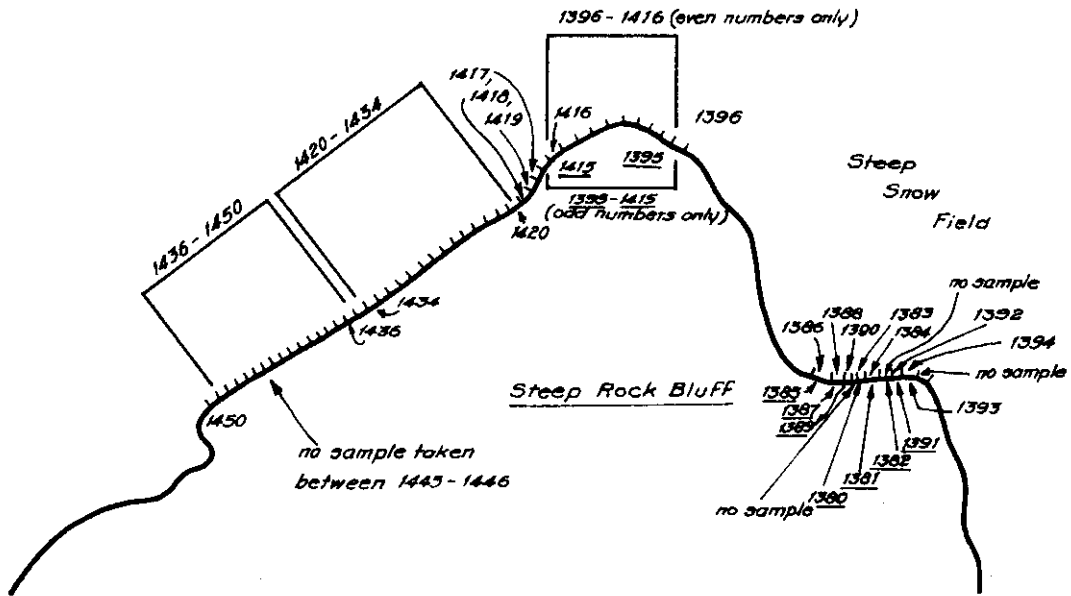
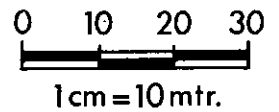
STATEMENT OF QUALIFICATIONS

I, GERALD G. CARLSON, of Apt. 703, 1045 Haro Street, Vancouver, B. C., do hereby declare:

1. That I received the degree of B.A.Sc. in Geological Engineering from the University of Toronto in 1969.
2. That I received the degree of M.S. in Geology from Michigan Technological University in 1974.
3. That I received the degree of Ph.D. in Geology from Dartmouth College in 1978.
4. That I have practiced geology in the field of mining exploration for seven years, and that I am a member of the Association of Professional Engineers of the Yukon Territory.
5. That I personally supervised the geological and geochemical work on the CIRQUE claim group described in this report.


Gerald G. Carlson
Regional Exploration Manager
Western Canada

South Zone

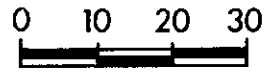


LEGEND

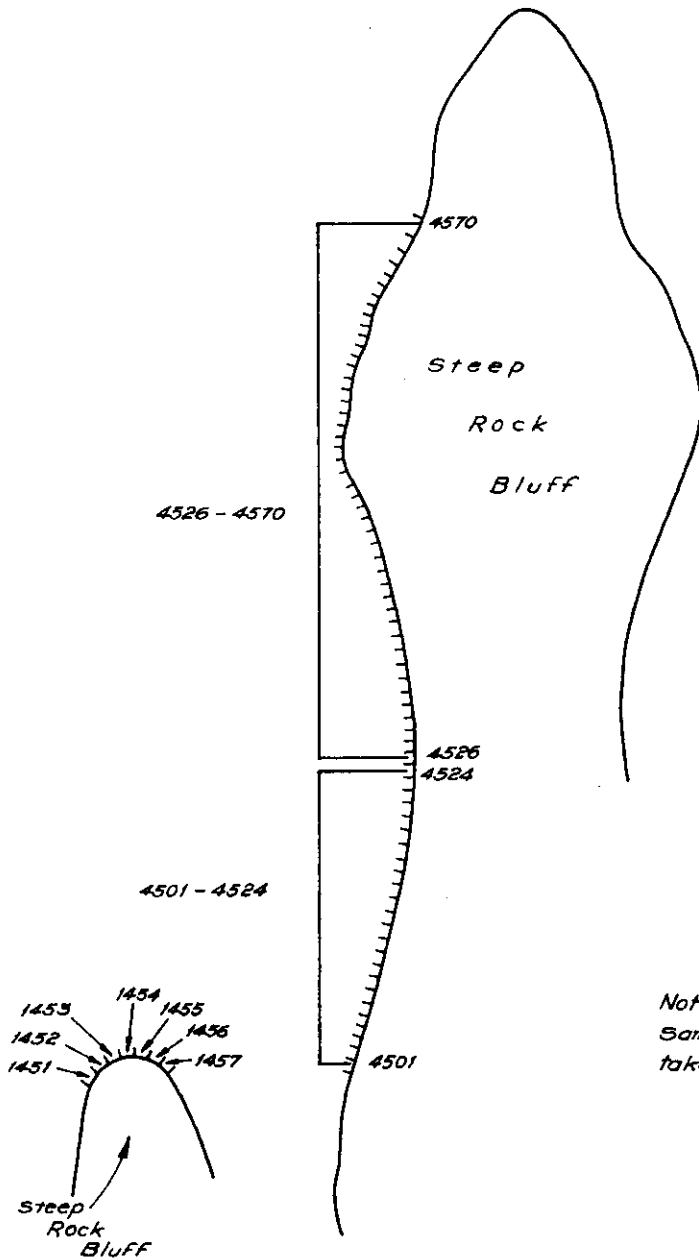
- 1416 plain numbers represent rockchip samples taken at 2 meter intervals
- 1380 underlined numbers represent channel samples taken at 2 meter intervals

ANACONDA Canada Exploration Ltd. ▲		
RECONNAISSANCE PROGRAM-1980 BENNETT LAKE <u>Cu - Mo Prospect</u> Rock Chip and Channel Sample Locations		
Compilation by : R.G.H.	Drawn by : C.D.	Date: August 1980
Scale :	N.T.S.	Drawing No. _____ of _____

Central Zone



1 cm = 10 mtr.



Note :
Sample numbers indicate Rock-chip sample,
taken at 2 meter intervals

ANACONDA Canada Exploration Ltd. ▲

RECONNAISSANCE PROGRAM-1980

**BENNETT LAKE
Cu-Mo Prospect**

Rock Chip Sample Locations

Compilation by : R.Z.

Drawn by : C.D.

Date : Aug. 1980

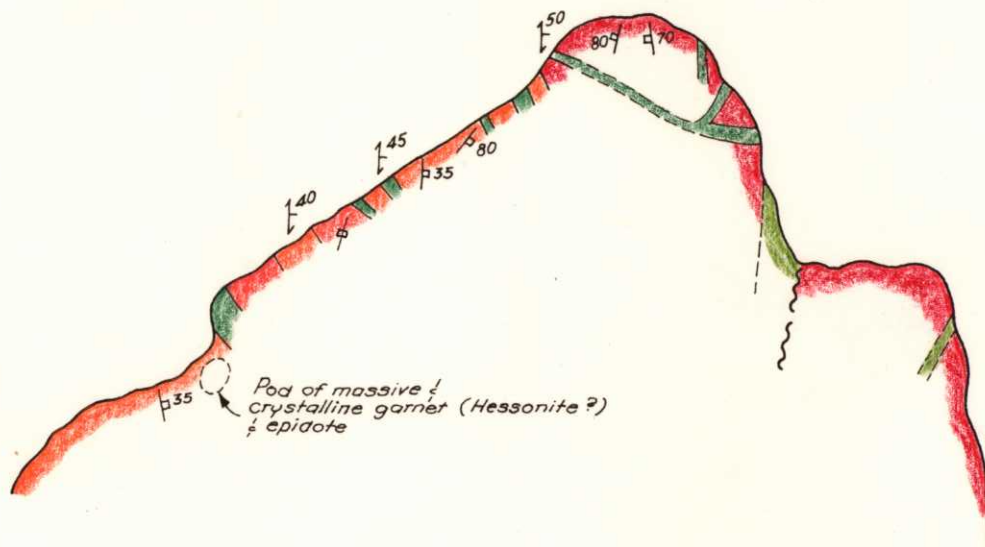
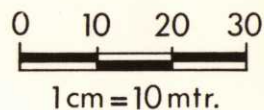
Scale :

N.T.S. 105 D/3 E

Drawing No.

of

South Zone



LEGEND

-  Mafic dikes
-  Pink rhyolite / Quartz eye porphyry
-  Andesite breccia
-  Andesite
-  Volcanic boulder breccia (Agglomerate)
-  Granite breccia
-  Shattered granite
-  Trace of base of outcrop
-  Geologic contact; mapped/ inferred
-  Jointing - fractures
-  Shear Zones
-  Fault

ANACONDA Canada Exploration Ltd. ▲

RECONNAISSANCE PROGRAM-1980

BENNETT LAKE
Cu-Mo Prospect

" CIRQUE 1-8 CLAIMS "

R.G.HILKER

Compilation by : B.G.

Drawn by : C.D.

Date : August 1980

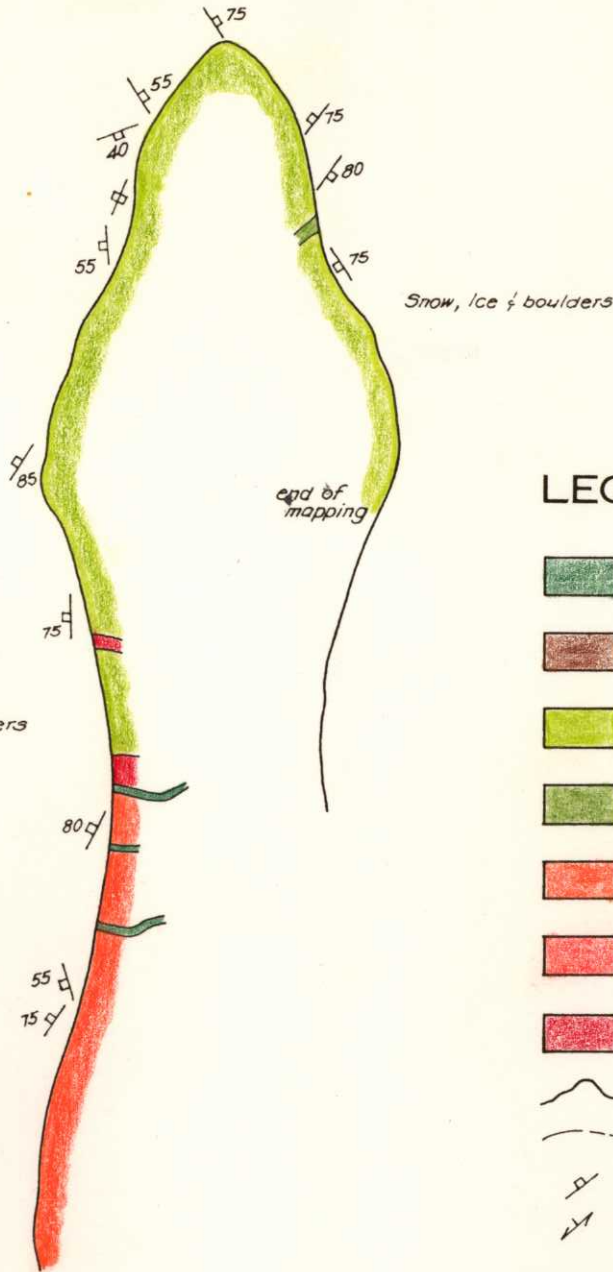
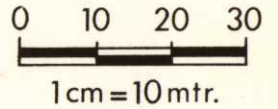
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N.T.S.












Drawing No.

of

Central Zone



LEGEND

-  Mafic aikes
-  Pink rhyolite, Quartz eye porphyry
-  Andesite breccia
-  Andesite
-  Volcanic boulder breccia (Agglomerate?)
-  Granite breccia
-  Shattered granite
-  Topography of base of outcrop
-  Geological contact
-  Jointing, fractures
-  Shear zones

* For rock descriptions and notes on mineralization see report

ANACONDA Canada Exploration Ltd. ▲

RECONNAISSANCE PROGRAM-1980

**BENNETT LAKE
Cu-Mo Prospect**

"CIRQUE 1-8 CLAIMS"

R.G. HILKER

Compilation by: B.G. Drawn by: C.D. Date: August 1980

Scale: N.T.S. Drawing No. _____
of _____