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REPORT ON

THE CHURCHILL - RACING RIVER

PROJECT - 1970

FOR

WINDERMERE EXPLORATION LTD. (N.P.L.)

1418 - 355 Burrard Street

Vancouver 1, B.C.

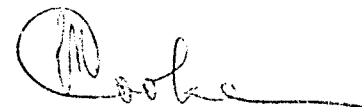
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WINDERMERE EXPLORATION LIMITED (N.P.L.)

GENERAL LOCATION MAP

CHURCHILL-RACING RIVER PROJECT

LIARD MINING DIVISION BRITISH COLUMBIA

Scale 1" = 125 Miles

by

CORDILLERAN ENGINEERING LIMITED

1418-355 BARRARD ST. VANCOUVER 1, B. C.

Fig. 1

SUMMARY

Exploratory work during 1970 consisted primarily of diamond drilling on the Bronson, geological evaluation and surface sampling on the prospects held prior to the beginning of the year, and a continuation of regional stream sediment sampling and prospecting over the southeastern portion of the favourable Proterozoic rocks in the Churchill-Racing River district. Follow-up prospecting, mapping, sampling and staking were also done on some of the more promising targets defined by the regional exploration work.

Diamond drilling on the Bronson prospect was hampered by the presence of permafrost and caving ground, and failed to intersect the vein system as anticipated. However, geological mapping and surface sampling of the veins, together with the drill data, added new information on the grade, extent and attitude of the mineralized structures. Geological evaluation and additional surface sampling of the veins on the remaining properties substantially improved the attractiveness of the Book claims, suggested lesser potential on the Meindi and 428 claims, and down-graded the Gataga and Chopper claims.

Four new claim groups were staked in 1970 as a result of the regional exploration programme. Preliminary evaluation

SUMMARY (CONT'D)

of three of these has given sufficiently encouraging results to warrant intensive exploratory work on at least one new prospect, the Fram claim group. An additional twenty-four favourable target areas were defined by anomalous copper in stream sediments and/or the presence of copper mineralization. At least twelve of these targets warrant immediate evaluation.

CONCLUSIONS

On the basis of present information it is evident that the localization of mineralization as well as the emplacement of dike intrusions is structurally controlled. Although copper mineralization occurs throughout the entire Proterozoic sequence, there seems to be certain sections within this sequence with an abnormally high proportion of mineral occurrences. The Churchill Copper and David Keays deposits and, the Bronson, Book, and Fram prospects all occur within the upper portion of the Proterozoic succession.

The main potential of the area underlain by Proterozoic rocks lies in the discovery and development of numerous vein-type high-grade copper deposits similar to Churchill Copper and Davis Keays. A few minor occurrences of chalcopyrite and chalcocite in fractured quartzites not intimately associated with dike intrusions in the Tuchodi Lakes area suggests some potential for larger tonnages where structural conditions and primary depositional features are permissive for the localization of copper mineralization.

The potential for proving a mineable deposit remains excellent for the Bronson, Book, Fram, Meindl and 428 prospects. The success of the 1970 regional programme, which

CONCLUSIONS (CONT'D)

resulted in the acquisition of new prospects with good potential such as the Fram, indicates that others of similar, if not better, calibre are likely to be discovered in the future.

The style of mineralization in the area makes it difficult to assess the potential of individual prospects without detailed geological mapping and close-spaced surface sampling. The emphasis should therefore be placed on this approach in initial evaluation of the properties acquired in 1970 and the other anomalous and/or mineralized target areas not yet examined in complete detail. This is particularly important because it is felt that the decision to embark on an underground programme on any single property will to a large extent be dependent on the surface information collected.

The experiences of Churchill Copper Corp. and Davis Keays, combined with the difficulties of access and the physical problems encountered in the 1970 drilling on the Bronson prospect, supports the conviction that diamond drilling is less meaningful than tunnelling in determining continuity and grade of these vein-type copper occurrences. The ultimate economic test must be based on underground data and it is of critical importance that this be

CONCLUSIONS (CONT'D)

obtained as early as possible in the exploration cycle.

RECOMMENDATIONS

1. An integrated programme of property development on the more attractive claim groups presently held, and follow-up evaluation of favourable target areas discovered during 1970, is recommended for the 1971 field season.
2. A programme of diamond drilling from the south face of the Bronson prospect is proposed to establish continuity of the mineralized structures to a depth of 1000 ft. in preparation for underground development. The estimated cost of a surface drill programme is \$213,000. Alternatively, the minimum cost of an underground programme is expected to be in the range of \$600,000.
3. Diamond drilling, totalling 4,000 ft., is recommended for the Book prospect. The cost of this drilling is estimated at \$140,000; based on the availability of an access airstrip on the Gataga River.

RECOMMENDATIONS (CONT'D)

4. The property development work proposed on eight other claim groups should consist of one or more of the following types of work: detailed geological mapping, surface sampling at intervals of 25 ft., trenching, drill site preparation and/or pack-sack drilling. It is suggested that this work be carried out as required by a 2-man geological crew and/or a 2-man drilling crew, with part-time assistance from a mountaineering team of two where necessary. Total estimated cost of this work is \$129,000. The recommended programme to be done on each claim group is as follows:

- (i) Fram Group -
 - Sampling of the main bornite-chalcopyrite vein.
 - Detailed geological mapping and prospecting.
 - Preparation of adit or drill site for 1972 programme if warranted.
- (ii) Meindl Group -
 - Prospecting and sampling of the northeast continuation of the known bornite-chalcopyrite veins.
- (iii) 428 Group -
 - Pack-sack drilling: 500 ft. in five holes located 100 ft. apart.
- (iv) Ice Group -
 - Geological mapping and prospecting.
 - Sampling of the veins.
- (v) 734 Group -
 - Sampling of the veins.

RECOMMENDATIONS (CONT'D)

(vi) Gataga Group -

-Pack-sack drilling: 300 ft. in three holes,
for assessment purposes.

(vii) Chopper Group -

-Geological mapping.

-Trenching and sampling of the northern section
of the veins.

(viii) Lynda Group -

-Sampling of the main chalcopryrite vein.

5. No work is recommended on the Mar, Marv and Marvin claim groups. The LMS claims were not evaluated in 1970 and were allowed to lapse.

6. The recommended follow-up work on at least twelve selected unstaked target areas defined by the 1970 regional programme includes geological mapping, prospecting and sampling of mineralized veins, to be followed by staking if warranted. The locations of these areas are outlined in Figure 2, Appendix G. Each target area should be checked by a 2-man prospecting crew for a period of from 7 to 10 days. The schedule of the geology crew of two should also be flexible enough to allow for more detailed work on any discoveries made by prospecting in 1971.

INTRODUCTION

This report is prepared for Windermere Exploration Ltd. (N.P.L.). It is based on the results of regional and property exploration programmes carried out for Windermere by Cordilleran Engineering Limited during 1970, in the Churchill-Racing River Area.

The exploration work done during 1970 stemmed directly from the discoveries made through the regional exploration programme which was carried out in 1969. The results of the investigations undertaken in 1970 are herein summarized and recommendations made for continued exploration in 1971. An estimate of the cost of this continued exploration is included.

Reports prepared on individual properties for assessment purposes appear elsewhere under separate cover.

RESUME OF THE CHURCHILL-RACING RIVER REGION

LOCATION AND ACCESS

The exploration activities were confined to an area of approximately 2,000 square miles in the Churchill-Racing

RESUME OF THE CHURCHILL-RACING RIVER REGION LOCATION AND ACCESS (CONT'D)

River region of Northeastern British Columbia (Figure 1). The locale of these investigations lies, approximately 100 miles west of Ft. Nelson, between the Alaska Highway and the Muskwa River (N.T.S. 94K, 94F). The copper deposits of Churchill Copper Corp. and Davis Keays Mining Co. are located in the area.

Each mine is served by a gravel airstrip suitable for use by light aircraft, and each is also accessible by gravel road, which runs south from the Alaska Highway, one from Mile 401 and the other from Mile 437. The remainder of the area is relatively inaccessible by ground routes, and the most practical means of internal access is by helicopter.

PHYSIOGRAPHY AND CLIMATE

The area lies east of the Trench in the northern part of the Rocky Mountains. The terrain is rugged and consists of a series of northwest trending mountain ranges. Elevations range from 2,500' to 10,900' above sea level. Timber line occurs at about 4,700' but only a small part of the area lies below this elevation. Glaciers are common above 6,000'. The region forms part of the MacKenzie drainage, being drained locally to

RESUME OF THE CHURCHILL-RACING RIVER REGION
PHYSIOGRAPHY AND CLIMATE (CONT'D)

the north and east by the Gataga, Toad, Racing, Tetsa, Chischa, Tuchodi and Muskwa Rivers.

The area is one of low precipitation, which annually amounts to less than 20 inches. Winter temperatures fall to as low as -50° F in January and February. The summer season is short, extending from June to September. The summers are cool with light but frequent rainfall. Snowfall may occur in every month of the year at the higher elevations.

REGIONAL GEOLOGY AND STRUCTURE

The area of interest encompasses a northwest trending belt of Proterozoic rocks in the central Rocky Mountains of northeastern British Columbia. The Proterozoic rocks are exposed from the Muskwa River in the southeast to Toad River Lodge on the Alaska Highway in the northwest.

The Precambrian rocks have undergone only a minor degree of regional metamorphism. These units are characterized by gentle open folds and by a series of sub-parallel thrust faults which dip to the west and southwest, particularly in the western part of the area. A broad, north-northwest plunging

RESUME OF THE CHURCHILL-RACING RIVER REGION
REGIONAL GEOLOGY AND STRUCTURE (CONT'D)

anticlinal dome constitutes the main fold structure in the eastern part of the belt. The axis of this structure runs from Tuchodi Lakes towards the Alaska Highway in the vicinity of Mile 397 (Bell, 1970, Personal communication).

The Proterozoic sedimentary rocks have been divided into more than four formations by previous workers (Bell, 1969, pg. 3). These formations are generally conformable, with gentle to moderate dips. The uppermost or Gataga formation consists of laminated, slatey-cleaved, dark grey argillites, mudstones and siltstones. The underlying Aida formation consists of interbanded light grey to brown, slatey-cleaved argillites, mudstones, siltstones, and massive dolomites and limestones. The combined thickness of Aida and Gataga formations which occur in the central and western parts of the area is estimated to be up to 11,000 feet (Bell, 1968, pp. 74-75). These formations lie stratigraphically above the Tuchodi and pre-Tuchodi formations which occur in the central and eastern part of the Precambrian belt. The sedimentary rocks comprising the Tuchodi and pre-Tuchodi formations are quartzites, sandstones, dolomites, limestones, shales, mudstones and siltstones.

RESUME OF THE CHURCHILL-RACING RIVER REGION
REGIONAL GEOLOGY AND STRUCTURE (CONT'D)

Steeply-dipping diabase and gabbro dikes have intruded the Proterozoic rocks prior to Lower Cambrian time. These dikes range in thicknesses from a few feet to a few hundreds of feet. In general the dikes trend to the northwest and dip to the southwest. They occur as single intrusions or in swarms. Dikes which trend to the north and northeast do occur, but are less common. Throughout the Proterozoic sequence the dikes exhibit a tendency to branch and coalesce where they occur in dense swarms.

Thermal effects of dike intrusion extend outward from their margins for distances not exceeding a few feet. Chlorite, actinolite and epidote are the most common secondary minerals developed by the alteration of the dikes, often along shear zones which characterize the margins of most dikes.

Sedimentary rocks of Lower Cambrian age unconformably overlie the late Precambrian rocks in the western and southern parts of the area. These early Paleozoic rocks consist of grey-weathering limestones and dolomites, interlayered with brown-weathering pebbly mudstones, conglomerates, sandstones,

RESUME OF THE CHURCHILL-RACING RIVER REGION
REGIONAL GEOLOGY AND STRUCTURE (CONT'D)

quartzites, and dark grey shales. The Lower Cambrian rocks follow the general strike and dip of the Proterozoic rocks, but are tilted at shallower angles to the southwest.

Along the northeast and east margins, the Proterozoic rocks are overlain by dolomites, limestones, quartzites, shales and cherts of Silurian and Devonian age (Taylor, 1963), which in turn are in contact with Late Paleozoic and Mesozoic sedimentary rocks of the Foothills.

MINERALIZATION

Vein-type copper mineralization occurs solely within the Proterozoic rocks throughout the area. Numerous occurrences of copper are associated with quartz-carbonate veins occupying faults, fractures and shear zones within the sedimentary rocks and along the margins of dikes. Although copper is localized in all formations comprising the Proterozoic sequence, there appears to be a higher proportion of occurrence within the Aida formation.

Bornite is less common than chalcopyrite, with which it is associated in several locations. Minor amounts of lead

RESUME OF THE CHURCHILL-RACING RIVER REGION
MINERALIZATION (CONT'D)

are not an uncommon association of the copper occurrences, some of which also carry low values in silver and gold. Chalcocite commonly occurs in association with chalcopyrite in the Tuchodi and pre-Tuchodi formations along the eastern and lower portion of the Proterozoic section.

The main accessory sulphide is pyrite. It occurs sparsely within quartz-carbonate veins, as minor disseminations within the margins of dikes, and as conformable streaks and lenses within the more argillaceous sedimentary units.

Locally there are minor occurrences of copper sulphides dispersed in sedimentary rocks immediately adjacent to mineralized quartz carbonate veins. In a few prospects brecciated zones along dikes carrying irregular patches of copper mineralization constitute the main zone of interest. Several minor occurrences in which copper occurs within fractured quartzites not intimately associated with dike intrusion, have been noted in the Tuchodi formation.

1970 EXPLORATION ACTIVITIES

The 1970 exploration investigations were carried out in two separate phases, consisting of property development and regional exploration work.

Property development work was done from a base camp established on the Bronson prospect during the period June 1 to August 29. The work consisted of the driving of a 72' adit, underground drill station construction, 2,500' of AQ diamond drilling, surface mapping, and sampling on the Bronson veins. The diamond drilling was contracted to Versatile Mining Services, and the surface sampling of the difficult mountain terrain to Chamonix Mountaineering Associates. McElhanney Associates carried out a location line survey of the central Bronson claims and at the same time surveyed in the majority of sample location points and the adit. A total of 16 workers were based at the Bronson camp. Surface sampling and geological mapping were done on eight other claim groups. Trenching on the Mar, Marv, and Marvin properties was done by Contract Exploration Services.

Helicopter support for the various activities was provided by Transwest Helicopters (1965) Ltd., and by Bronson Aero Services. Winter freighting of fuel and camp equipment was done prior to the beginning of the field season by B. C. Yukon

1970 EXPLORATION ACTIVITIES (CONT'D)

Airways. Mobilization of personnel, drill equipment, and other heavy supplies for the Bronson camp was accomplished late in May by a Bell 204B helicopter provided by Okanagan Helicopters Ltd.

The regional exploration work consisted of stream sediment sampling, prospecting, reconnaissance mapping and staking. This survey was undertaken within an area of approximately 1,000 square miles over the southeastern portion of the Proterozoic belt. Some of this regional work constituted follow-up prospecting of anomalous stream sediments and/or mineralization discovered during the 1969 programme. The remaining regional exploration was based on photogeological interpretation, research, and compilation of new geological information over the southeast part of N.T.S. 94K and the northeast part of N.T.S. 94F.

The regional programme was carried out by a crew of nine, based at a camp on Tuchodi Lakes. The operations were serviced fulltime by helicopter from May 25 to September 4 by Bronson Aero Services.

The cost of carrying out these programmes from January 1, 1970 to December 31, 1970 is \$447,542.68. A detailed statement of these expenditures appear in Appendix D.

1970 EXPLORATION RESULTS AND PROPOSED
PROGRAMME FOR 1971

PROPERTIES

Work was done on twelve prospects during the summer of 1970, and the results are described below. The locations of the prospects presently held are indicated in Figure 2, Appendix G, and the location data summarized as follows:

<u>Prospect</u>	<u>No. of Claims</u>	<u>Location</u>
Bronson	96	58°10'N. Latitude, 125°20'W. Longitude, Gataga River.
Book	10	58°09'N. Latitude 125°18'W. Longitude.
Fram	18	58°00'N. Latitude, 124°35'W. Longitude, Gathto Creek.
Meindl	42	58°25'N. Latitude, 125°35'W. Longitude, Toad River.
428	41	58°11'N. Latitude, 125°16'W. Longitude, Gataga River.
Gataga	34	58°10'N. Latitude, 125°20'W. Longitude, Gataga River.
Chopper	14	58°07'N. Latitude, 125°13'W. Longitude, Gataga River.

PROPERTIES (CONT'D)

<u>Prospect</u>	<u>No. of Claims</u>	<u>Location</u>
Lynda	42	58°07'N. Latitude, 124°54'W. Longitude, Gataga River.
734	12	58°08'N. Latitude, 124°59'W. Longitude, Gataga River.
Ice	28	58°04'N. Latitude, 124°50'W. Longitude, Tuchodi River.
Marvin	24	58°31'N. Latitude, 124°35'W. Longitude, Tetsa River.
Marv	16	58°27'N. Latitude, 124°40'W. Longitude, Tetsa River.
Mar	4	58°36'N. Latitude, 124°37'W. Longitude, Tetsa River.
<hr/>	<hr/>	
13 Prospects	381	Total No. of Claims

BRONSON PROSPECT

Location : 5 1/2 miles southwest of Churchill Peak on the headwaters of a tributary of the Gataga River.

Reference: Location of Properties, Figure 2, (Appendix G).

Property : 96 claims, (Appendix E).

During the summer of 1970 the Bronson claim group was enlarged from 92 to 115 claims (Figure 3, Appendix G). On completion of the location line survey of the central Bronson claims, a group of overlapping claims were abandoned and restaked

PROPERTIES

BRONSON PROSPECT (CONT'D)

as the 55 Bron claims (Figure 4, Appendix G). Nine marginal claims of the original Bronson group were also allowed to lapse.

Geology: Figure 5, (Appendix G).

It was impossible to map all areas of the Bronson prospect because of the rugged nature of the terrain. Surface mapping was therefore restricted to the accessible areas such as the tops of ridges and the area south and north of the main east-west mineralized ridge. The overall geological picture was completed from interpretation of air photographs and by the use of binoculars in defining the pattern of dikes in inaccessible and obscure areas. Professional mountaineers were engaged to sample the mineralized veins.

The Bronson copper showings are located on a prominent east-west ridge that rises 2,000' from the nearby valley floor. The highest point on the ridge is at an elevation of 8,100'.

The sedimentary rocks underlying the main ridge belong to the Proterozoic sequence described by Bell (1968). These rocks strike to the north and northwest and dip 20° - 30°

PROPERTIES

BRONSON PROSPECT (CONT'D)

to the southwest. They appear to be representative of both the Aida and Gataga formations. The non-calcareous dark grey to black-weathering finely interbanded shales, argillites, and siltstones of the Gataga formation occupy the upper portion of the ridge. They are underlain by brown-weathering, interbanded calcareous shales, argillites, siltstones, and argillaceous limestones and dolomites.

The Proterozoic rocks are unconformably overlain along the ridges west of the mineralized area, by Lower Cambrian formations which strike to the northwest and dip 10° - 25° to the southwest. These consist of massive grey limestones, dolomites, brown pebbly mudstones, sandstones and minor black shales.

The Precambrian rocks are intruded by a series of sub-parallel to branching diabase and gabbro dikes which form two major structural sets. The most common set strikes to the northwest and dips steeply to the southwest. A less common but probably structurally more important set strikes to the east-northeast and dips moderately to steeply to the south. This set is represented essentially by a branching dike mass on the south side and a single dike on the north face of the mineralized

PROPERTIES

BRONSON PROSPECT (CONT'D)

ridge. The dikes exhibit narrow chilled margins and have caused minor bleaching and recrystallization of the adjacent limey sedimentary rocks. Folds and warps are also evident on a small scale within the contact sedimentary rocks, which otherwise follow a very uniform attitude.

Structure:

Faults and shears are common along the margins of dikes in the area. Clayey gouge material, chlorite and epidote are commonly associated with such zones. Two prominent northwest trending faults dip moderately to steeply to the southwest. The contact between rock units 2 and 1 (Figure 5, Appendix G), suggests that the block within these faults has moved downward. Subsidiary faults also branch from these main structures.

A pronounced east-northeast linear structure is evident for a distance of about 3,500 ft. on the north face of the mineralized ridge. Its eastern extremity coincides with a series of mineralized veins, and the western section marks the surface trace of the central mineralized zone. The attitude on this linear feature is unknown, but the veins associated with it dip variably from 50° to 80° to the south.

PROPERTIES
BRONSON PROSPECT (CONT'D)

Mineralization:

Chalcopyrite occurs as vein fillings together with quartz and minor amounts of carbonate in all of the five zones of mineralization. Bornite occurs in appreciable amounts in the central, southern and western zones. Minor quantities of galena are associated with the bornite mineralization. Low but erratic values in gold and silver have been noted with this mineral assemblage. Assay results and locations of the sampled sections are indicated in Figures 6, and 7, (Appendix G).

All vein structures excepting those in the central zone are related to faults and shears associated with diabase dikes. The strikes and dips of the veins are usually parallel to the dike margins. Minor amounts of pyrite and specular hematite occur along the borders of some of these veins.

The central zone occurs on a steep north face which is partially obscured by permanent snow. It is characterized by conspicuous bleached and intensely fractured shales and argillites, and contains numerous veins that strike to the east, northeast and northwest. A myriad of tiny discontinuous quartz and carbonate stringers, with or without copper mineralization,

PROPERTIES

BRONSON PROSPECT (CONT'D)

occur in an area of approximately 300 ft. x 150 ft. along the western termination of the central zone. The most continuous veins within the zone dip to the south, suggesting that the zone may also dip in a general southerly direction. Figure 8 (Appendix G), shows the down-dip projection of this central zone.

The surface dimensions of each mineralized zone are as follows:

	<u>Length</u>	<u>Average Width</u>	<u>No. of Samples</u>	<u>Average % Cu</u>
North Zone (Adit)	600 ft.	1.6 ft.	7	6.6
East Zone	1,000 ft.	5.9 ft.	4	1.2
Central Zone	900 ft.	5.1 ft.	19	6.6
West Zone	300 ft.	7.0 ft.	4	7.3
South Zone	700 ft.	2.2 ft.	6	14.2

Mapping of the mineralized float train in the valley to the north of the veins has indicated three associations that are directly related to the mineralization on the north face of the ridge (Figure 5, Appendix G). Movement of the float train in the valley is from east to west, hence the eastern limit of surface mineralization is approximately defined.

The most eastern cluster in the float train consists essentially of barren and weakly mineralized quartz-carbonate

PROPERTIES
BRONSON PROSPECT (CONT'D)

vein material derived from the East Zone. A small south central cluster consists of a mixture of vein quartz with chalcopyrite as well as bornite from the Central Zone. Material from the Central Zone is also characterized by intensely fractured and bleached argillites containing tiny mineralized fractures. A third cluster of float material extends to the northwest and consists mainly of boulders of massive to submassive chalcopyrite, together with normal and ribbon-like quartz-carbonate gangue. This material was derived from the Central and North Zones.

Diamond Drilling:

A total of 2,501 ft. of AQ diamond drilling was completed in three holes, Figure 6, (Appendix G). Drilling was done from an underground drill station at the end of a 72 ft. adit at the 6,850 ft. elevation on the north face. An air-driven BBU-2 drill with wireline equipment was employed. Drilling began on June 30, and was terminated on August 8. The average daily advance during the period was 62.5 ft. The drill sections are shown in Figure 8, (Appendix G). Diamond drill logs are also included, (Appendix F).

PROPERTIES
BRONSON PROSPECT (CONT'D)

The drilling statistics in summary are as follows:

<u>DDH</u>	<u>Date Started</u>	<u>Date Completed</u>	<u>Azimuth</u>	<u>Dip</u>	<u>Length</u>	<u>Assays</u>
1	June 30	July 17	206°	+ 3°	1,107 ft.	None
2	July 18	August 1	160°	+30°	657 ft.	None
3	Aug. 2	August 8	180°	+24°	737 ft.	None
Total					2,501 ft.	

All three holes, without intersecting the main veins, were lost in fractured and caving ground, assumed to be on the footwall side of the mineralized structures. The drilling was severely hampered by deflection of the holes and by the presence of permafrost, which was in the vicinity of 28°C. at the collar. Drill hole tests made by Tro-pari compass indicated that the holes deflected to the right and upward. These factors made it necessary to terminate drilling before completion of the 5,000 ft. planned to test the central zone.

Proposed Programme for 1971:

Failure to establish subsurface continuity and confirmation of the true attitude of the central mineralized structure by diamond drilling makes it difficult to decide on

PROPERTIES
BRONSON PROSPECT (CONT'D)

or justify an underground programme. A preliminary evaluation of the Bronson potential, problems of access, and costs of further exploration, suggests that drilling is necessary to establish the down-dip continuity of the mineralized structures before any underground work is done.

Plans to test the central zone should be aimed at proving downward continuity by drilling and then establishing tonnage and grade by tunnelling. The two-stage programme envisaged is:

- (1) Surface diamond drilling from the south side of the mountain at an elevation of 7,400 ft.
- (2) Underground tunnelling from the south side at an elevation of 6,800 ft., and cross-cutting on the mineralized zone.

Preliminary estimates indicate a minimum cost of \$213,000 for a surface drilling programme and \$530,000 for an underground programme.

An underground programme must be undertaken eventually because the experience of Davis Keays Mining Co. has clearly illustrated the reliability of drifting in indicating the

PROPERTIES

BRONSON PROSPECT (CONT'D)

continuity and grade of vein structures in this area. The example of Churchill Copper Corp. has demonstrated the unreliability of diamond drill results in establishing continuity and grade.

BOOK PROSPECT

Location : 6 miles southwest of Churchill Peak on a south-flowing tributary of the Gataga River.

Reference: Location of Properties, Figure 2, (Appendix G).

Property : 10 claims, (Appendix E), and Figure 3, (Appendix G).

Geology: Figure 9, (Appendix G).

The claims are underlain by both the Aida and Gataga formations. The slatey-cleaved dark grey to black-weathering shales and argillites of the Gataga formation occur along the ridge on the western edge of the claim group. These rocks are underlain to the east by brown-weathering argillites, argillaceous limestones, and dolomites of the Aida Formation. Both formations exhibit fine interbanding of the respective constituent rock units. Strike of the bedding is north to northwest and dips are shallow to the west and east. Slatey cleavage is well-developed throughout, striking northwesterly and dipping moderately to the southwest.

PROPERTIES
BOOK PROSPECT (CONT'D)

A series of sub-parallel dikes cut the sedimentary rocks in the central and northern parts of the claim group. These dikes strike to the north and northwest, and dip moderately to steeply to the west.

Structure:

Fault and fracture zones strike to the northeast across the sedimentary rocks on the southern claims, to the north and northwest along dike margins on the central part of the claim group, and to the north in the northern claims. A major north-south thrust fault is evident in the northeastern and southern section of the claim group. The eastern block appears to have moved down relative to the western portion. On the Book #9 and #10 claims, this thrust zone reaches a width of 600 ft. and dips vertically to 70° west. On the Book #1 claim the thrust plane dips about 60° to the west. The intervening central area is partially obscured by talus material, but where there are exposures north-south shearing is evident.

Mineralization:

Quartz-carbonate veins, varying in thickness from 1 1/2 ft. to 12 ft., occur mainly along the trace of the north-

PROPERTIES

BOOK PROSPECT (CONT'D)

south thrust fault. Discontinuous veins also occur along the margins of dikes, and within fractures at acute angles to the major fault.

Three prominent zones of copper mineralization were mapped and sampled. The northern zone consists of quartz-carbonate veins with chalcopyrite over a strike length of approximately 1,600 ft. The main vein is about four feet wide and dips steeply to the west. It is dislocated in places by northwesterly trending dikes. The southern part of this zone contains blebs of galena as well as sub-massive chalcopyrite. Quartz, calcite and dolomite constitute the gangue minerals. The copper sulphides are in places weathered to a red-brown limonitic gossan, together with minor amounts of malachite and azurite.

At the southern end of the Book #7 and #8, another quartz carbonate vein is exposed over a strike distance of 500 ft. This vein averages about 8 ft. in width and it dips from 55° to 70° to the west. Its northern section is covered by talus material. Another zone, 5 ft. wide, runs for 400 ft., on the claims and south beyond the southern boundary. Mineralization within

PROPERTIES
BOOK PROSPECT (CONT'D)

the southern zones consist essentially of chalcopyrite in a quartz-carbonate gangue.

The mineralized zones trend in a general north-south direction either along the same trace or slightly en echelon. The veins occur along a strike distance of some 6,000 ft. in places pinching out and in others disappearing under talus. With a total exposed length of approximately 3,000 ft. and an approximate average width of 5 ft., this prospect has the potential of developing into an economic deposit with grade in the order of 3% copper. The vein structure could have a much larger potential because it is reported to continue another 4,000 ft. to the south on the PJ claims which are owned by Bralorne CanFer Resources.

Recommended Program for 1971:

Before a programme of underground development is warranted, the surface and near-surface continuity of the mineralized zones should be more firmly established. In particular it is necessary to determine whether continuity exists below the drift-covered areas between the individual zones. Although diamond drilling is not expected to provide accurate results on

PROPERTIES

BOOK PROSPECT (CONT'D)

the grade and potential tonnage of this type of deposit, it is felt that drilling will provide the preliminary data to decide whether an underground programme is justified.

Consequently, a programme of diamond drilling is recommended to test the structure over a strike length of approximately 4,000 ft. Drill testing to an average depth of 400 ft. will require a minimum of 4,000 ft. in ten holes at an estimated cost of \$140,000. (Appendix B). The cost of constructing an access airstrip on the Gataga River, to serve both the Bronson and Book properties is estimated at \$75,000.

FRAM PROSPECT

Location : 11 miles south of the west end of Tuchodi Lakes on a tributary of Gatho Creek.

Reference : Location of Properties, Figure 2, (Appendix G).

Property : 18 claims, (Appendix E).

Geology: Figure 10; (Appendix G).

Interbanded, brown-weathering argillaceous dolomites and argillites belonging to the Aida Formation outcrop on the

PROPERTIES
FRAM PROSPECT (CONT'D)

Fram claims. The rocks strike to the northwest and dip 10° - 30° to the southwest. Dolomites of Lower Cambrian age unconformably overlie the Aida Formation. A narrow basal conglomerate and quartzite marks its contact with the underlying Proterozoic rocks.

The Proterozoic units are intruded by gabbro and diabase dikes which strike generally to the northeast.

Structure:

Fault and shear zones occur along the margins of many of the dikes in the area. The major fault structure on the property strikes to the northeast and dips to the northwest. The rocks on the southeast side of this structure appear to have moved downward, bringing the Lower Cambrian rocks into contact with the Proterozoic rocks on the northwest side. Subsidiary faults occur parallel to this major structure or tranverse to it.

Mineralization:

The main zone of copper mineralization occupies a subsidiary north-south fault structure which is terminated at its northern end by the major northeast fault and its associated dike mass. Bornite and chalcopyrite occur together with quartz

PROPERTIES
FRAM PROSPECT (CONT'D)

and minor carbonate as vein material. The vein dips variably from vertical to moderately east and west. It has been traced for 3,000 ft. along strike, but only the northern 1,000 ft. is well mineralized. This zone averages 7% copper across an average width of 6 ft. through a vertical distance of 500 ft. Values in silver range from 0.1 to 1.9 ounces.

Other zones with minor galena and/or chalcopyrite occur along dike margins or in veins and fractures trending to the northeast. These others appear to have little economic potential.

Proposed Programme for 1971:

The programme recommended is intended to define more accurately the grade of surface mineralization, locate any extensions, and evaluate the controls of mineralization. The access is moderately difficult, hence any serious physical work should be planned and prepared for well ahead of the work schedule. It is proposed that the main vein be channel sampled every 25' along strike and that prospecting and detailed geological

PROPERTIES

FRAM PROSPECT (CONT'D)

mapping be done. Preparation of drill or adit site for a programme in 1972 should be contingent on the surface information.

MEINDL PROSPECT

Location : 10 miles southwest of Churchill Copper Corp. Mine, on a tributary of the Toad River.

Reference: Location of Properties, Figure 2, (Appendix G).

Property : 42 claims, (Appendix E).

Geology: Figure 11 (Appendix G).

The Proterozoic rocks underlying the area of the claims have been grouped with the Gataga and Aida Formations. The Aida Formation is here divided into two units. The lower unit consists of thin-bedded, brown-weathering siltstones, argillites, and argillaceous dolomites. It is overlain by orange-brown dolomitic quartzite. The Gataga formation is represented by 800 ft. - 1,000 ft. of dark grey to black-weathering argillites in conformable sequence above the calcareous units. The Proterozoic formations strike N20°W and dip 40°W.

Lower Cambrian sedimentary rocks unconformably overlie the Precambrian sequence on the western edge of the claim

PROPERTIES

MEINDL PROSPECT (CONT'D)

group. Thick-bedded dolomites, conglomerates, sandstones, quartzites and dolomite breccias comprise this younger section. They strike N45°W and dip 15°SW.

Gabbro and diabase dikes are the only intrusive rocks occurring in the area, and they are confined entirely to the Proterozoic formations. The dikes form a dense branching swarm that strikes to the north and dips steeply to the west. A few of these dikes depart from this common trend, striking to the east and dipping to the north. Alteration of the intruded country rocks is evident within only a few feet of the dike margins.

Structure:

The eastern edge of the Proterozoic rocks probably occurs below the drift-covered area in the vicinity of the Toad River. The rocks underlying the claims form a homoclinal structure which dips moderately to the west. A prominent north-south thrust fault occupies the valley floor on the western side of the area. Movement on the western side of the fault appears to have been upward and/or to the north. Other fault zones of lesser magnitude strike to the east, northeast and northwest. Some of these also coincide with the margins of dikes.

PROPERTIES
MEINDL PROSPECT (CONT'D)

Mineralization:

The main zone of copper mineralization is localized along the faulted north margin of a dike that trends east-north-easterly. This zone is faulted off at its eastern end towards another set of veins that follows a north-trending dike and associated marginal fault. The main zone is exposed for 1,200 ft., but overall the mineralized structures measure 2,000 ft. The average width of 20 chip samples is 3.8 ft. with an average grade of 6.5% copper.

Chalcopyrite and bornite are the main copper minerals, and these occur as vein fillings together with quartz and carbonate. The main mineralized structure consist of discontinuous lenses or shoots that pinch and swell over strike distances of 50 ft. to 100 ft. It is estimated that only one third to one half of the structure is mineralized.

Proposed Programme for 1971:

There is very little further surface work that could be done to improve the potential on the Meindl claims. Additional prospecting, trenching and sampling to the northeast of the main zone may increase the overall length of the mineralized

PROPERTIES

MEINDL PROSPECT (CONT'D)

structures. However, the claims can be kept in good standing until 1972 by expenditures made in 1970.

The next stage of exploration will be one to test subsurface continuity and grade, and this will have to be accomplished by diamond drilling and/or drifting. No major programme is being recommended in 1971. Considering the number of attractive properties requiring work during the next year, and the cost of further exploration, it may be in the interest of Windermere Exploration to consider granting of an option on this property at the present time.

428 PROSPECT

Location : 4 miles southwest of Churchill Peak, on a tributary of the Gataga River.

Reference: Location of Properties, Figure 2, (Appendix G).

Property : 41 claims, (Appendix E).

Geology: (Figure 12, Appendix G).

The claims are underlain by interbanded light grey to brown-weathering argillites, argillaceous limestones and dolomites probably belonging to the Aida formation. The

PROPERTIES
428 PROSPECT (CONT'D)

formation is divided into two units on the basis of colour. The upper unit weathers to a light brown colour; the lower one is darker and characterized by the presence of bands of green and black slaty argillites. Both units appear conformable, striking to the northwest and dipping gently to the southwest. Slaty cleavage is well-developed in the argillites.

The sedimentary rocks are intruded by diabase and gabbro dikes which trend to the north and dip steeply to the west. Parallel dikes in the eastern part of the claim group have been traced for approximately 6,000 ft. Prominent zones of alteration border the dikes, extending a few tens of feet into the surrounding sedimentary rocks. Chlorite and epidote are developed on the dike margins, giving way to bleached argillites and recrystallized limey rocks further away.

Structure:

A major fault zone, varying from 50 ft. to 200 ft. wide, strikes north through the center of the claim group. It dips steeply to the west at approximately 70°, and forms the locus of numerous quartz-carbonate veins. The occasional exposure of dike occurs within this zone or cuts it at acute

PROPERTIES
428 PROSPECT (CONT'D)

angles. Subsidiary branching and parallel faults occur intermittently on either side of the main north-south structure.

Quartz-carbonate veins within fault zones strike in the same general direction as the faults but they appear to dip vertically or steeply to the east. Similar veins also occur along the margins of dikes in the southern part of the property. The veins vary in widths from 1/2 inch to 10 ft., and occur singly or in swarms over widths of 10 ft. to 50 ft. The smaller veins pinch out over short strike distances. The larger veins are more persistent, in some instances being exposed for several hundreds of feet along strike. These veins occur intermittently over a strike distance of more than 5,000 ft., in a general north-south direction.

Mineralization:

Chalcopyrite is the most abundant sulphide mineral present, and it occurs as vein material together with quartz and carbonate. Secondary malachite and azurite are associated with the copper-bearing quartz carbonate veins, and occur as a staining on the adjacent country rocks. Minor amounts of galena also occur sporadically within some of these veins.

PROPERTIES
428 PROSPECT (CONT'D)

Sampling was confined to the better mineralized veins and swarms of veins. The sample locations, widths sampled, and assay results for copper are indicated in Figure 12, (Appendix G). A swarm of mineralized veins are exposed for approximately 500 ft., on claim #5, and along strike for about the same distance between claims #3 and #4. The intervening area is partially obscured by talus material.

Numerous veins occur over a large area on claims #9, #11, and #24. Several of these veins are poorly mineralized or barren. The total strike distance over which these veins outcrop is in excess of 1,000 ft. Other narrow veins are also exposed to the south along strike, but they are generally less than two feet wide and are only sporadically mineralized. These veins occur along the edges of a diabase dike where evidence of post-mineralization shearing appears in the development of serpentine and slickenside markings.

Proposed Programme for 1971:

The overall grade of about 1.5% copper appears low in comparison with known vein-type deposits in the general area. However, the occurrence of numerous closely spaced veins on claims #3 to #5 is considered a favourable sign that a larger than

PROPERTIES
428 PROSPECT (CONT'D)

average tonnage could be developed. The immediate objective is to establish continuity between the two main zones containing vein swarms and at the same time get some information of the downward extensions of these zones.

The claims come open in 1971, hence some work is required during the next year. A minimum of 500 ft. of pack-sack drilling is recommended to test these structures at shallow depths.

GATAGA PROSPECT

Location : 6 miles west-southwest of Churchill Peak on a north fork of the Gataga River.

Reference: Location of Properties, Figure 2, (Appendix G).

Property : 34 claims, (Appendix E).

Geology: Figure 13 (Appendix G)

The sedimentary rocks consist of interbanded grey shales, argillites, argillaceous limestones and dolomites probably belonging to the Aida and Gataga formations. The lower (Aida) formation is essentially calcareous in nature, and it occurs mainly

PROPERTIES

GATAGA PROSPECT (CONT'D)

in the northern part of the claim group. The overlying Gataga formation is less calcareous, and contains sections of black argillites to the south and west of the claims. Both formations exhibit fine interbanding of the various rock types. Individual layers range in thicknesses from a fraction of an inch to a few feet. Strike of the bedding is northwest and dips are moderate to the southwest. Slatey cleavage is well-developed throughout, striking north-westerly and dipping moderately to the southwest.

Massive, grey dolomites, quartzites, and siliceous dolomites occur on the southwestern corner of the claim group (Map units #3 and #5). These units strike to the northwest and dip very gently to the southwest. Map unit #3 has been grouped with the Proterozoic sequence because it appears to have been intruded by diabase dikes, reported to be late Proterozoic in age (Bell, 1968, p. 10). Lithologically this unit is similar to unit #5, and hence may be Lower Cambrian in age. Dark grey shales also occur within the Lower Cambrian formations.

A series of sub-parallel dikes have intruded the sedimentary rocks in the central and southern parts of the claim group. These dikes strike to the northeast, north and northwest, and dip steeply to the west. Thermal metamorphic effects of dike

PROPERTIES

GATAGA PROSPECT (CONT'D)

intrusion extend only a few inches to a few feet outward from the dike margins, and are dependent on the nature of the intruded rocks. The alteration products formed by this thermal activity include epidote, actinolite, diopside and marble.

Structure:

Fault and shear zones on the property strike to the northeast, north, and northwest. These structural breaks occur within the sedimentary rocks and along the margins of dikes. A major fault zone strikes to the northwest along the creek flowing through the southern claims. Quartz-carbonate veins, ranging in width from 6 inches to 10 ft. occur along the southeast exposure of this fault. Discontinuous veins also occur along the margins of dikes, and within shear zones that transect some of the dikes at acute angles. Small calcite stringers coincide with minor subsidiary shears.

Mineralization:

Three small zones of copper mineralization were mapped and sampled. The two northern zones on claims #9 and #11 consist of a series of chalcopyrite-bearing veins over a strike length of approximately 250 ft. These veins range from one to

PROPERTIES

GATAGA PROSPECT (CONT'D)

ten feet wide and dip moderately to steeply to the east. All occur in association with faulted dike margins. Quartz, calcite and dolomite constitute the gangue minerals. The copper sulphides are in places weathered and the veins are impregnated with malachite and azurite.

At the southern end of the Gataga Group on claim #19, other quartz carbonate veins are exposed over a strike distance of 200 ft. Vein widths here range from 6 inches to 2 ft. The attitudes follow the fault zone which dips at 60° to 70° to the southwest. These veins terminate in both directions either within dike rock or argillite. This mineralization consists of chalcopyrite in quartz-carbonate veins, localized in the north-west trending fault zone that cuts diagonally across a diabase dike. Chalcopyrite occupies central portions of the veins, occurring both as disconnected blebs and as massive lenses up to 12 inches wide. Subsidiary peripheral fractures and shears contain calcite and pyrite veinlets.

Proposed Programme for 1971:

The potential of the Gataga showings appears insignificant from the mapping and sampling which were done.

PROPERTIES

GATAGA PROSPECT (CONT'D)

However, the claims are well located for installations if production is attained on the adjoining Bronson prospect. The claims will lapse in 1971 if no further work is done. Three short pack-sack drill holes are recommended to maintain the claims, one on each of the three showings.

CHOPPER PROSPECT

Location : 9 miles south of Churchill Peak, on a south tributary of the Gataga River.

Reference: Location of Properties, Figure 2, (Appendix G).

Property : 14 claims, (Appendix E).

Geology: Figure 14, (Appendix G).

Interbanded shales, argillites, argillaceous limestones and dolomites represent the Proterozoic sequence exposed on the claims. In the northern part of the claim group, the lowermost unit consists essentially of black-weathering shales and argillites. The upper unit consists of interbanded, brown-weathering argillaceous limestones, dolomites and shales. Both of these units are calcareous in nature, and they are believed to belong to the Aida formation. The overlying Gataga

PROPERTIES

CHOPPER PROSPECT (CONT'D)

formation is less calcareous and it is made up mainly of dark brown-weathering shales and argillites.

The Proterozoic formations exhibit fine interbanding of the various rock types. Individual layers range in thicknesses from a fraction of an inch to a few feet. Strike of the bedding is northwest and dips are moderate to the southwest. Slatey cleavage is well-developed throughout, striking northwesterly and dipping moderately to the southwest.

A series of grey, massive dolomites, and brown siliceous sandstones and quartzites overlie the Proterozoic sequence on the ridge at the southwestern corner of the claim group. These units strike to the northwest and dip moderately to the southwest. They are believed to be lower Cambrian in age, and are separated from the underlying Proterozoic rocks by an unconformity.

Sub-parallel dikes have intruded the Proterozoic rocks in the central and southern parts of the claim group. These dikes strike in a general north to northwest direction and dip steeply to the southwest. Thermal metamorphic effects of dike intrusion extend only a few inches to a few feet outward.

PROPERTIES
CHOPPER PROSPECT (CONT'D)

from the dike margins, and the adjacent rocks contain epidote, actinolite, diopside and marble.

Structure:

Fault and shear zones occur along dike margins and within the sedimentary rocks. These structural breaks are most strongly developed in the argillites and shales at the top of the Proterozoic sequence. The most prominent break coincides with a north-northeast trending dike and associated vein system.

Quartz-carbonate veins, ranging in width from 1 inch to 9 ft. occur along the margins of dikes and in shear zones within the sediments. Not all shear zones, however, contain vein material, and only a small proportion of such veins are mineralized.

Mineralization:

Copper mineralization occurs as chalcopyrite associated with quartz-carbonate veins. Minor amounts of galena and pyrite are also present. Secondary malachite staining is characteristic feature of these veins. The most prominent

PROPERTIES
CHOPPER PROSPECT (CONT'D)

mineralized zone is located in the northern section of the claim group. Two veins, ranging from 2 ft. to 9 ft. wide, occur over a strike distance of 900 ft. They dip steeply to the west or vertically. The veins are discontinuous in nature, and so is the copper mineralization, which pinches and swells in lens-like streaks from a fraction of an inch to 10 inches wide.

A single vein on the Chopper #7, is exposed for approximately 700 ft. Its width varies from 1 ft. to 3 ft., and it dips at 40° to the west. Copper mineralization within this vein is spotty and discontinuous, and many sections of the vein are barren. Two other showings occur to the south, but the veins are exposed for shorter distances. Mineralization in all of the southern veins is erratic and discontinuous in nature. Throughout the mineralized areas, chip samples were taken only across the richer sections of the veins.

Proposed Programme for 1971:

The Chopper Prospect appears to be very limited in size and grade potential. Additional work is required on the northern mineralized zone to determine whether the claims are

PROPERTIES

CHOPPER PROSPECT (CONT'D)

worth maintaining when they come due in 1971. A limited programme of mapping, trenching and sampling is therefore recommended for the coming year.

LYNDA PROSPECT

Location : 13 miles southeast of Churchill Peak, on the headwaters of the Gataga River.

Reference: Location of Properties, Figure 2 (Appendix G).

Property : 42 claims, (Appendix E).

Geology: Figure 15, (Appendix G).

The area is underlain by light grey to brown interlayered shales, argillites and argillaceous dolomites of the Aida formation. These sedimentary rocks strike to the northwest and dip 10° - 30° to the southwest. Late Proterozoic diabase dikes, intruded into these rocks, strike in a general northerly direction. The dip of these dikes is generally to the west. A few dikes trend to the northeast and others to the northwest.

PROPERTIES

LYNDA PROSPECT (CONT'D)

Structure:

Many faults coincide with the margins of the north trending dikes. Other faults which strike to the northwest distort the sedimentary rocks and displace dikes. Pronounced deformation and in places overturning of the bedded rocks is evident in close proximity to these faults.

Mineralization:

Submassive chalcopyrite occurs in association with quartz carbonate veins in several areas on the Lynda claims. The best mineralized structure occurs along both sides of a branching dike which extends 2,000 ft. through claims #15, 17 and 18. The vein on the western margin pinches and swells from one to five feet, and has been traced for 1,500 ft. Six samples across this vein averaged 3.0% copper over an average width of 3 ft. The vein on the eastern side of the dike carries less copper and is discontinuous along strike.

Proposed Programme for 1971:

The claims are due in mid-1971. A detailed sampling programme is proposed to determine the surface continuity and grade of the best mineralized structure. The assistance of

PROPERTIES

LYNDA PROSPECT (CONT'D)

professional mountaineers will be required in this sampling programme.

734 PROSPECT

Location : 11 miles southeast of Churchill Peak, on the headwaters of the Gataga River.

Reference: Location of Properties, Figure 2, (Appendix G).

Property : 12 claims, (Appendix E), Figure 16, (Appendix G).

Geology:

No mapping has been done on the 734 claims, which lie within the area generally underlain by argillaceous rocks of the Aida formation. No dikes were noted in close proximity to the mineralized vein structure.

Structure:

A single vein outcrops on the east face of a north-trending ridge. The vein follows the eastern side of a fault zone that strikes N20°W and dips 65°SW. The vein and fault disappear below a glacier at 7,500 ft. elevation at the

PROPERTIES

734 PROSPECT (CONT'D)

south end, and is inaccessible beyond an elevation of 8,000 ft. to the north.

Mineralization:

Chalcopyrite occurs in association with quartz and carbonate vein material. The veins are characterized by abundant malachite staining. Two chip samples taken across the vein near the southern glacier averaged 2.2% copper over an average width of 5 ft.

Proposed Programme for 1971:

Detailed surface sampling at 25 ft. intervals by professional mountaineers is recommended.

ICE PROSPECT

Location : 18 miles southeast of Churchill Peak, on a west tributary of Tuchodi River.

Reference: Location of Properties, Figure 2, (Appendix G).

Property : 28 claims, (Appendix E), and Figure 17, (Appendix G).

PROPERTIES
ICE PROSPECT (CONT'D)

Geology and Mineralization:

No geological work has been done on the Ice prospect. The claims were staked to cover an area underlain by Proterozoic rocks in which numerous quartz carbonate veins occur. Several streams draining the area carry anomalous amounts of copper. Chalcopyrite-bearing float and green stains on some vein walls confirm the presence of copper mineralization.

Proposed Programme for 1971:

A thorough evaluation of the claims is recommended. This includes geological mapping, prospecting, and sampling of the veins at 25 ft. intervals.

MARVIN PROSPECT

Location : 10 miles south of Summit Lake. 4 1/2 miles north of Tetsa Lake, immediately west of the Tetsa River.

Reference: Location of Properties, Figure 2, (Appendix G).

Property : 24 claims, (Appendix E).

PROPERTIES
MARVIN PROSPECT (CONT'D)

Geology: Figure 18, (Appendix G).

The property is underlain by E-W trending sedimentary rocks consisting of black siltstones, argillites, shales, dolomites and quartzites. These rocks dip 15° to 20° southward. Small remnants of younger grey limestone occur on the north and southern boundaries of the claim block. Three steeply dipping NW trending basic dikes outcrop on the north part of the area.

Mineralization:

Two parallel quartz-carbonate veins located on claims 24 and 26 were traced intermittently along strike for 1,500 ft. They are nearly vertical and strike E-W. The veins are weakly mineralized with chalcopyrite and chalcocite. Menzies (1951) mentions chalcopyrite and chalcocite mineralization along a northwest trending dike in this area.

No new mineralized zones were discovered in 1970, and trenching (Figure 18) on the east-west vein system confirmed the subeconomic nature of the mineralization.

No work is proposed on these claims for 1971.

PROPERTIES (CONT'D)

MARV PROSPECT

Location : 14 miles south of Summit Lake immediately west of Tetsa Lake.

Reference: Location of Properties, Figure 2, (Appendix G).

Property : 16 claims (Appendix E), Figure 19, (Appendix G).

Geology and Mineralization:

The claims are situated over the favourable Proterozoic rocks within a copper positive area outlined by stream sediment sampling in 1969.

Menzies (1951) reports 4 copper showings ('Strangward B') at this location. He describes 7 quartz-calcite veins and fault zones mineralized with chalcopyrite, bornite and chalcocite. A 2 ft. channel sample taken by Menzies assayed 4.35% Cu.

Trenching in 1970 failed to uncover any significant copper mineralization (Figure 19).

No work is recommended in 1971.

PROPERTIES (CONT'D)

MAR PROSPECT

Location : 2 1/2 miles SE of Summit Lake.

Reference: Location of Properties, Figure 2, (Appendix G).

Property : 4 claims, (Appendix E), and Figure 20, (Appendix G).

Geology and Geochemistry:

Stream sediment sampling in 1969 showed moderately strong copper response in a creek which drains the claims (more than 60 ppm). The regional background is less than 23 parts per million copper.

Work in 1970 indicated the presence of abundant pyrite within a black shale unit, which underlies the claims. Trenching down to fresh bedrock did not uncover any copper mineralization (Figure 20). It is concluded that only trace amounts of copper are present. In association with abundant pyrite, copper is very mobile and this accounts for the anomalous amounts of copper found in the stream sediments.

No further work is recommended for 1971.

REGIONAL EXPLORATION

AREAL EXTENT

The area over which the 1970 regional programme was conducted extends from Henry Creek in the north to the Muskwa River in the south. This encompasses an area of approximately 1,200 square miles lying to the east of the upper Gataga River watershed. The favourable Proterozoic rocks outcrop extensively within the upper Tuchodi, Chischa and Tetsa River drainages. South of Mt. Sylvia these rocks are exposed at lower elevations mainly along the courses of Gathto Creek and the Muskwa River.

EXPLORATION METHOD

Prior to the field season, additional office research consisted of compilation of new geological and structural data and photogeological interpretation. This provided the basis for preliminary helicopter reconnaissance and stream sediment sampling over the favourable Proterozoic rocks.

Ground prospecting, geological mapping, and stream sediment sampling were done as a follow-up where anomalous geochemical results, mineralized quartz carbonate veins and favourable dike structures were discovered in 1969 and 1970.

REGIONAL EXPLORATION (CONT'D)

GEOCHEMICAL DATA

Stream sediment samples were processed and analyzed in the same manner as those collected in 1969 (Forgeron, 1969). The cumulative total of samples collected in the area during the past two summers now stands at 4,181. The results for copper are classified as follows:

Background	15 ppm
Standard Deviation	25 ppm
Threshold	65 ppm
Anomalous	+65 ppm -

These figures show a slight increase over the values obtained for the 1969 results alone. The increase may be attributed to the higher background copper and/or to the larger number of anomalous values found in the southeastern part of the Proterozoic belt during 1970.

MINERAL OCCURRENCES

During 1970 an additional 65 copper occurrences were discovered through regional geochemical stream sediment sampling and prospecting. These bring the total number of copper occurrences known in the area to 162.

REGIONAL EXPLORATION
MINERAL OCCURRENCES (CONT'D)

The following claim groups were staked (Figure 2, Appendix G) to cover several of these new occurrences.

<u>Claim Group</u>	<u>No. of Claims</u>	<u>Area</u>
Fram	18	Gathto Creek
Lynda	42	Gataga River
734	12	Gataga River
Ice	<u>28</u>	Tuchodi River
Total	100	

AREAL POTENTIAL

The distribution of copper occurrences indicates that a high proportion of these are located in the Aida formation. The deposits of Churchill Copper and Davis Keays belong to this group. Chalcopyrite, and in some instances bornite, is the predominant copper sulphide in these prospects which lie in the central and western section of the Proterozoic belt.

Many chalcopyrite showings occur in the Tuchodi formation, but none of these has as yet shown potential of being developed into an economic deposit. A large area on the eastern and southern part of the belt is underlain by these rocks.

REGIONAL EXPLORATION
AREAL POTENTIAL (CONT'D)

Chalcocite and chalcopyrite are characteristic of many of the occurrences located in the Tuchodi and pre-Tuchodi formations in the eastern margin of the belt.

The Tuchodi formation consists predominantly of quartzitic clastic rocks in this eastern section. A few inconspicuous copper showings here are localized in fractured quartzites not intimately associated with dike intrusions. Lenses of pyrite are not uncommon in the more argillaceous rocks occurring at a lower stratigraphic level. Some of these pyrite lenses appear to be conformable to the bedding.

The area underlain by Proterozoic rocks has excellent potential for the development of several more vein-type deposits. There is lesser potential for developing deposits with somewhat larger tonnages where structural conditions have resulted in the development of quartz stockworks. An example of this feature is the shattered and mineralized area 300 ft. x 150 ft. within the central zone on the Bronson prospect. Similar occurrences may exist where structural conditions have shattered the brittle quartzitic rocks of the Tuchodi formation.

REGIONAL EXPLORATION
AREAL POTENTIAL (CONT'D)

A remote possibility also exists that copper may be found in a similar habit as the pyrite lenses occurring in the lower argillaceous units of the Proterozoic succession. It should be noted that the Precambrian sedimentary rocks of the Racing River area are equivalent to the Purcell rocks of the Waterton area of southeastern B.C. (Taylor, Bell, 1968), the Redstone area in the MacKenzie Mtns., N.W.T.

PROPOSED PROGRAMME FOR 1971

A large number of favourable targets have been defined by the regional exploration programme. Less than half of these have been checked out in detail. Of the numerous geochemical anomalies and new showings discovered in 1970, a total of 20 are of sufficient interest to warrant additional prospecting, mapping and sampling. Work done in the vicinity of previously known showings staked by other interests indicated another 10 areas of interest. Some of these areas may be available for staking within the coming year. Priorities have been assigned to the twelve most attractive target areas on the strength of geochemical anomalies and the presence of copper mineralization and/or favourable vein and dike structures. For proper evaluation, each target area will be checked by a two-man prospecting crew for a period of from 7 to 10 days.

REGIONAL EXPLORATION
PROPOSED PROGRAMME FOR 1971 (CONT'D)

The locations of target areas are indicated on Figure 2, (Appendix G) and the outstanding features of each target are listed below in order of priority:

A. Mt. Sylvia

Strong geochemical anomalies were obtained on eight creeks within a 4 square miles area containing one copper showing.

B. Henry Creek

This is in an area with a high copper anomaly associated with chalcocite mineralization within a cirque area. Two small chalcocite showings and submassive pyrite veins occur down-stream from the main area of interest.

C. Callison Area

Several strong geochemical anomalies are clustered in the vicinity of the Callison showing, where good chalcocite veins, 6 inches to 3 ft. wide, are exposed. Most of the area is held by other interests, and developments here should be watched for possible acquisitions.

REGIONAL EXPLORATION
PROPOSED PROGRAMME FOR 1971 (CONT'D)

D. Ice Area

Six copper-bearing veins are exposed in the vicinity of the Ice claims. These fall within a large area of copper anomalous streams.

E. Tuchodi River

No prospecting has been done at the head of Tuchodi River, where moderate geochemical response was obtained in the vicinity of numerous dikes and quartz-carbonate veins.

F. Gathto Creek South

A strongly anomalous stream sample is located near a chalcopyrite showing. No prospecting has been done.

G. Bilou Peak

Two moderately strong stream anomalies and copper showings make this area attractive for further prospecting.

H. Mt. Aida

Bornite occurs in a quartz-carbonate vein in an area marked by moderate geochemical anomalies. Although a part of the area has been checked previously, additional prospecting is warranted.

REGIONAL EXPLORATION
PROPOSED PROGRAMME FOR 1971 (CONT'D)

I. North Tuchodi Lakes

Three creeks in this area showed moderately strong copper anomalies. Minor amounts of chalcopyrite were also located in fractured quartzite.

J. Western Tuchodi Lakes

Copper anomalies appear in five creeks in this area, and minor chalcopyrite occurs in two veins. A 20 ft. barren quartz vein was noted at one stream sample location.

K. 150/151 Mile Creeks

Three copper showings located in 1969 were not checked further. Location close to the Alaska Highway prompts some prospecting, and sampling of the copper occurrences in this area.

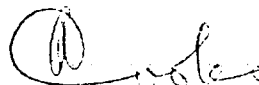
L. Racing River

Six separate veins with chalcopyrite were located in 1969 within a large area of the upper Racing River. No followup work has been done within this area.

REGIONAL EXPLORATION
PROPOSED PROGRAMME FOR 1971 (CONT'D)

M. East Gathto Creek

A number of geochemical anomalies occur on tributaries on the southeast side of Gathto Creek, which do not coincide with known copper mineralization. A wedge of Proterozoic rocks also occurs on the southeastern edge of the area. These anomalies should be checked further, and additional geochemical checks made over the southeastern area.



D. L. Cooke, Ph.D., P.Eng.
CORDILLERAN ENGINEERING LIMITED

DLC:ifs
November 26, 1970

ACKNOWLEDGEMENT

The success of the Churchill-Racing River Project was due principally to the co-operative efforts of the Directors of Windermere Exploration, Ltd., the employees of Cordilleran Engineering Limited, and the various contractors employed on this project.

The geological map of the Bronson Claim Group (Figure 5) represents the combined efforts of several workers. Special acknowledgement is made for the contributions made by R. V. Beavon of Canadian Superior Explorations Ltd., and Dennis Forgeron of Cordilleran Engineering. Leo Verstraete of Chamonix Mountaineering Associates provided invaluable assistance during the mapping phase and carried out the sampling on the Bronson, Lynda and 734 prospects. The geological mapping of the other properties was done by D. Forgeron.

The priorities assigned to target areas under the section on Regional Exploration were done with the assistance of L. P. Duquette who ably conducted the regional exploration programme in 1969 and 1970. The writer, who supervised both the property and regional programmes, assumes full responsibility for any inaccuracies or omissions in this report.

ACKNOWLEDGEMENT (CONT'D)

Special thanks go to A. F. Reeve, of Cordilleran Engineering who continually made helpful suggestions throughout the duration of this project.

Discussions held with R. T. Bell, and G. C. Taylor of the G.S.C., provided invaluable insights into some of the broader aspects related to regional geology, structure and mineralization in the Racing River area.

Finally, a very special acknowledgement is made to Pat Bronson, for the excellent helicopter support which he provided in all phases of the 1970 operations.

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APPENDIX "A"

ESTIMATED COST
SURFACE DIAMOND DRILLING
SOUTH FACE, BRONSON PROSPECT

WINDERMERE EXPLORATION LTD. (N.P.L.)SURFACE DIAMOND DRILLING
SOUTH FACE, BRONSON PROSPECTESTIMATED COSTS

MANAGEMENT		
8 mo. x \$1500		\$ 12,000
SALARIES		
16 man mo. x \$1000		16,000
EMPLOYEE BENEFITS		
16,000 x 15%		2,400
OTTER AIRCRAFT		
44 hrs. x \$125		5,500
HELICOPTER		
Bell G3E1 (Service)		
400 hrs. x \$135	\$	54,000
Alouette II (Drill Moves)		
30 hrs. x \$250	<u>7,500</u>	61,500
ASSAYING		
50 samples x \$8		400
SURVEYING		2,500
DRAFTING		1,000
DRILLING		
Mobilization	\$	2,500
Demurrage Mar, Apr, May		1,500
Footage 4000' x \$10		40,000
Extras 25%	<u>10,000</u>	54,000
EXPEDITING		
\$700/mo + 15% x 5 mo.		4,000
TRUCK		
15,000 mi. x \$.20 (Rental)		3,000
CARS (Rental)		800
RADIO EQUIPMENT (Repairs Lic etc.)		200
OFFICE & TEL. (Vancouver Rent)		
8 mo. x \$200		1,600
OFFICE (Summit Lake Rent)		
5 mo. x \$300		1,500
SNOW CRUISER		
(Rent) 1 mo.	<u>200</u>	
		BALANCE FORWARD \$166,600

SURFACE DIAMOND DRILLING
SOUTH FACE, BRONSON PROSPECT

ESTIMATED COSTS (Cont'd)

BALANCE FORWARD	\$166,600
ROCK DRILL	
(Repair, parts etc.)	300
OFFICE SUPPLIES	
Printing, reports, etc.	1,000
TELEPHONE, TELEGRAPH, POSTAGE etc.	1,000
FREIGHT, EXPRESS, DELIVERY etc.	2,500
INSURANCE, LEGAL	500
BOOKKEEPING & STENOGRAPHY	
8 mo. x \$300	2,400
TRAVEL	
Hotel, Meals, Fares, etc.	4,000
CAMP SUPPLIES	2,000
FOOD	
1000 man days x \$5	5,000
RECORDING FEES, MINING LICENCES	1,400
PROPANE, NAPHTHA	
Misc. Lubricants, Reg. gasoline	800
AVIATION FUEL	
400 hrs. x 15 gal. x 60	
Incl. freight & bbl.	3,600
AVIATION LUB	
400 x 1 qt. x \$1	400
MISC. SUPPLIES & SERVICES	2,500
	Total \$194,000
	Contingency 10%
	Allowance <u>19,000</u>
	GRAND TOTAL <u>\$213,000</u>

September 30, 1970.

APPENDIX "B"

ESTIMATED COST
BOOK DRILLING PROGRAMME

&

GATAGA AIRSTRIP CONSTRUCTION

WINDERMERE EXPLORATION LTD. (N.P.L.)ESTIMATED COST
BOOK DRILLING PROGRAMME

MANAGEMENT			
4 mo. x \$1500			\$ 6,000
SALARIES			
17 man/mo. x \$1000			17,000
EMPLOYEE BENEFITS			
15% x \$17,000			2,500
AIRCRAFT			
DC-3, 8 trips @200 mi. x \$1.35	\$ 2,200		
Beaver, 40 trips @200 mi. x \$.90 ..	<u>7,200</u>		9,400
EXPEDITING			
4 mo. x \$250			2,000
TRACTORS			
D-6, 300 hrs. x \$25	\$ 7,500		
JD, 600 hrs. x \$10	<u>6,000</u>		13,500
DRILLING			
4000' @\$12			50,000
RENTALS			
Truck 6000 mi. @\$.25	\$ 1,500		
Cars	500		
Office 4 mo. x \$200	<u>800</u>		2,800
EQUIPMENT & SUPPLIES			
Camp	\$ 3,000		
Misc.	1,000		
Food 900 man days @\$5	4,500		
Propane, Reg. Gas etc.	2,000		
Diesel 3000 gal. (incl. BBL. (@\$.50 Freight etc.)	<u>1,500</u>		12,000
GENERAL EXPENSE			
Office Supplies, Printing etc.	\$ 500		
Tel., Tel. & Postage	1,000		
Freight	3,000		
Ins., Legal, Audit etc.	1,000		
Bookkeeping & steno 4 mo. x \$350 ..	1,400		
Travel (Fares, Hotels, Meals)	3,000		
Misc.	<u>1,000</u>		10,900
	Total		\$126,100
	Approx. 10% Contingency		<u>13,900</u>
			<u>\$140,000</u>

September 15, 1970.

WINDERMERE EXPLORATION LTD. (N.P.L.)ESTIMATED COSTGATAGA AIRSTRIP CONSTRUCTION

(150' x 5000', 8 miles SSW Churchill Peak)

MANAGEMENT			
	3 mo. x \$1500	\$	4,500
SALARIES			
	7 man/mo. x \$1000		7,000
EMPLOYEE BENEFITS			
	15% x \$7000		1,100
AIRCRAFT			
	Otter, Freight		
	40 trips, @70 mi. x \$1.25	\$	3,500
	Beaver, Service		
	20 trips, @200 mi. x \$.90		3,600
	Helicopter (initial access) 206B		
	10 hrs. @\$240	<u>2,400</u>	9,500
CONSULTING (Engineering Re. Strip)		2,000
EXPEDITING			
	3 mo. x \$250		750
TRACTOR (D6)			
	Mobilization, Dismantle & Re-assemble..	\$	6,000*
	Build Airstrip		13,000*
	Stand-By (Spring)		
	2 mo. x \$1500	<u>3,000*</u>	22,000
RENTALS			
	Truck 6000 mi. @\$.25	\$	1,500
	Cars		500
	Office 3 mo. x \$200		600
	Snowmobile		
	3 mo. x \$250	<u>750</u>	3,350
EQUIPMENT & SUPPLIES			
	Camp Supplies (incl. prefab bldg.	\$	5,000
	Misc. Supplies		1,000
	Food		
	400 man days x \$5		2,000
	Propane, Naptha, Reg Gas, etc.		1,000
	Diesel Fuel		
	3500 gal. (incl. BBL. & Freight)		
	@\$.50		1,700
	Aviation Fuel JP-4		
	300 gal. @\$.50	<u>150</u>	<u>10,850</u>
	Balance Forward	\$	61,050

ESTIMATED COST
GATAGA AIRSTRIP CONSTRUCTION
 (CONT'D)

Balance Forward		\$ 61,050
GENERAL EXPENSES		
Office Supplies, Printing etc.	\$ 200	
Tel., Tel. & Postage	500	
Freight	1,000	
Insurance, Legal	500	
Bookkeeping & Steno		
3 mo. x \$350	1,050	
Travel (Fares, Hotel, Meals etc.) ..	3,000	
Audit	500	
Misc.	1,000	
		<u>7,750</u>
	Total	\$ 68,800
	Approx. 10% Contingency	<u>6,200</u>
		<u>\$ 75,000</u>

*Contractor Estimates.

September 15, 1970

APPENDIX "C"

ESTIMATED COST
OUTSIDE PROPERTIES AND REGIONAL EXPLORATION

WINDERMERE EXPLORATION LTD. (N.P.L.)
ESTIMATED COST

OUTSIDE PROPERTIES AND REGIONAL EXPLORATION

SALARIES AND FEES

Management - 6 months @\$1500/mo.	\$ 9,000.00	
Salaries - 28 man months @\$700/mo.	19,600.00	
Employers Benefits 15% of 19,600	<u>2,940.00</u>	\$ 31,540.00

DRILLING

800' @\$10/ft. (pack sack)	\$ 8,000.00	
Rental - Cobra & accessories, 100 days @\$17.50 ..	1,750.00	
Assays	550.00	
Miscellaneous supplies	<u>500.00</u>	10,800.00

TRANSPORTATION

Fixed wing - 25 Otter trips @\$110/trip	\$ 2,750.00	
Helicopter - 4 months @\$12,000/mo.	48,000.00	
Truck - 1 Fwd. 4 mo. @\$500/mo.	2,000.00	
Aviation Gas - 150 bbls. @\$.50/gal.	<u>3,300.00</u>	56,050.00

DOMICILE AND CAMP SERVICES

Equipment purchase	\$ 5,000.00	
Radio rental - 4 units @\$80/mo. for 4 mo.	1,280.00	
Telephone	1,000.00	
Freight	1,500.00	
Travel Expenses (Fares, Room & Board)	4,000.00	
Food supplies	6,000.00	
Stove oil, Naptha	500.00	
Expediting 3 1/2 months @\$600/mo.	<u>2,100.00</u>	21,380.00

MISCELLANEOUS

Special Services - Mountaineer 30 days @\$100	\$ 3,000.00	
Geochemical analysis and consulting	2,000.00	
Storage	230.00	
Office supplies, drafting & printing	1,000.00	
Maps, airphotos, field instruments	1,000.00	
Mining Certificates & Recording Fees	<u>2,000.00</u>	9,230.00

TOTAL ESTIMATED COST \$129,000.00

DLC: October 16, 1970

APPENDIX "D"

STATEMENT OF EXPENDITURES
FOR WORK IN 1970 TO DECEMBER 31, 1970.

APPENDIX D

WINDERMERE EXPLORATION LTD. (NPL)
STATEMENT OF EXPENDITURES FOR WORK in 1970 to DECEMBER 31, 1970.

	<u>Administration</u>		<u>Regional</u>		<u>Properties</u>		<u>Yr-to-Date</u>
<u>FEEES AND SALARIES:</u>							
Admin Management Fees	31,337.00		-		-		
Technical Management Fees	1,975.00		1,747.50		8,252.50		
Listing Fees	2,998.77		-		-		
Holiday Pay	-		512.63		443.70		
W.C.B.	5.52		837.53		503.98		
U.I.C. (Co portion)	15.15		178.17		113.87		
Canada Pension (Co portion)	3.15		329.36		292.73		
Group Insurance (Co portion)	16.87		30.68		32.23		
Salaries	2,000.00		22,610.44		19,334.17		
Medical Insurance (Co portion)	-	38,351.46	-	26,246.31	31.25	29,004.43	93,602.20
<u>SPECIAL SERVICES:</u>							
Fixed Wing Aircraft	-		3,399.00		8,792.00		
Helicopter	-		28,736.62		97,665.46		
Geochemical Analysis	-		861.00		24.00		
Assays	-		148.00		698.50		
Geological Consulting (special projects)	-		-		658.83		
Surveying (topo, legal & engineering)	-		-		9,701.25		
Trenching	-		-		8,293.43		
Drafting	-		-		1,046.25		
Diamond Drilling	-		-		83,607.15		
Photogrammetry	-		40.00		2,097.00		
Mountain Climbing Fees	-	-	-	33,184.62	4,700.00	217,283.87	250,468.49
<u>RENTALS:</u>							
Office Rental	2,250.00		-		-		
Radio Rental & Supplies	-		1,583.67		1,834.57		
Truck Rental	-		1,968.94		1,835.18		
Car Rental	-		-		69.66		
Misc. Rentals	-	2,250.00	50.00	3,602.61	533.58	4,272.99	10,125.60
TOTALS CARRIED FORWARD:		40,601.46		63,033.54		250,561.29	354,196.29

	<u>ADMINISTRATION</u>	<u>REGIONAL</u>	<u>PROPERTIES</u>	<u>YR-TO-DATE</u>
TOTALS FORWARD:	\$40,601.46	\$63,033.54	\$250,561.29	\$354,196.1
<u>GENERAL:</u>				
Subscriptions, Ad, Ent.	445.21	-	-	
Travel	664.44	4,972.88	6,617.85	
Telephone & telegraph	640.72	769.16	1,712.26	
Postage	136.58	3.78	21.11	
Freight, Express	20.00	230.97	2,635.29	
Printing	2,926.42	120.13	299.35	
Off. supp & stationery	491.83	381.65	739.84	
Maps, Lit, air photos	1.58	455.50	96.39	
Mining Licences	205.00	37.50	12.50	
Bookkeeping & Steno	3,450.00	-	-	
Insurance, Legal	7,580.47	-	-	
Accounting, Audit	1,510.00	-	-	
Recording Fees	-	520.00	6,478.00	
Bank Chgs-B. of M.	23.04	-	-	
	18,095.29	7,491.57	18,612.59	44,199.4
<u>CAMP SUPPLIES & EQUIPMENT:</u>				
Camp Supplies	-	3,870.89	14,742.50	
Camp supplies (over \$100 excluding tents)	-	-	990.95	
Food	-	5,975.51	8,979.01	
Propane, naptha & mis.lub.	-	231.50	583.59	
Explosives - blasting	-	-	701.00	
Diesel Fuel	-	2,712.29	2,712.31	
Regular Gasoline	-	-	393.93	
Aviation fuel & lub.	-	3,433.59	9,418.52	
Vehicles-gas,oil,pts,rprs	-	964.66	1,047.54	
Instruments (over \$50)	-	354.75	303.45	
Equipment rprs (except veh)	-	40.34	66.55	
	-	17,583.53	39,939.35	57,522.8
Less Bank Interest	8,375.94			8,375.9
TOTAL EXPENSES:	<u>\$ 50,320.81</u>	<u>\$88,108.64</u>	<u>\$309,113.23</u>	<u>\$447,542.6</u>
<u>Working Capital:</u>				
Bank of Montreal	1,362.91			
Toronto Dominion B.	25,583.19			
Term Deposits	100,000.00			
	<u>\$126,946.10</u>			

N.B.: Transwest \$10,452.78 (Properties-Helicopter)
Versatile 5,000.00 (Properties-D. Drilling)
McGillvary 800.00 (Admin-Accounting & Audit)
\$16,252.78- are o/s payables for 1970
and are included in the
aforementioned accounts
and figures given to
Dec. 31/70.

APPENDIX "E"

CLAIM DATA SUMMARY

WINDERMERE EXPLORATION LTD. (N.P.L.)CLAIM DATA SUMMARY

<u>Name of Claims</u>	<u>No. of Claims</u>	<u>Due Dates</u>	<u>Record No.'s</u>
Book #1-10	10	Aug. 27, 1972	39393-39402
Bron #1-8, 10, 13-17, 170, 18-28, 29-32 Fr. 39-47, 49-50, 60-73	55	Aug. 20, 1971	48213-48267
Bronson #54-59	6	Oct. 3, 1971	40356-40361
Bronson #76-77	2	Oct. 3, 1971	40378-40379
Bronson #78	1	Oct. 3, 1973	40380
Bronson #79-88	10	Oct. 3, 1971	40381-40390
Bronson #94-105	12	July 13, 1971	45127-45138
Bronson #106-114, 116	10	Aug. 10, 1971	45983-45992
Chopper #1-14	14	Oct. 3, 1971	40328-40341
428 #1-14	14	Sept. 24, 1971	40136-40149
428 #15	1	July 13, 1971	45139
428 #16	1	July 13, 1972	45140
428 #17	1	July 13, 1971	45141
428 #18	1	July 13, 1972	45142
428 #19	1	July 13, 1971	45143
428 #20-24	5	July 13, 1972	45144-45148
428 #25	1	July 13, 1971	45149
428 #26	1	July 13, 1972	45150
428 #27	1	July 13, 1971	45151
428 #28	1	July 13, 1972	45152
428 #29	1	July 13, 1971	45153
428 #30	1	July 13, 1972	45154
428 #31	1	July 13, 1971	45155
428 #32	1	July 13, 1972	45156
428 #33	1	July 13, 1971	45157
428 #34	1	July 13, 1972	45158
428 #35-37	3	July 13, 1971	45159-45161
428 #39-42	4	Aug. 31, 1971	48362-48365
Fram #1-18	18	Sept. 11, 1971	48874-48891
Gataga #1-20	20	Sept. 24, 1971	40116-40135
Gataga #22-35	14	July 13, 1971	45427-45440
Ice #1-28	28	Aug. 31, 1971	48366-48393
Lynda #1-42	42	July 6, 1971	45075-45116
Mar #37-40	4	Feb. 6, 1971	34849-34852
Marv #21-36	16	Feb. 6, 1971	34833-34848
Marvin #1-20	20	Feb. 6, 1973	34813-34832
Marvin #23-24	2	Oct. 16, 1971	40568-40569
Marvin #26-27	2	Oct. 16, 1971	40571-40572

CLAIM DATA SUMMARY (CONT'D)

<u>Name of Claims</u>	<u>No. of Claims</u>	<u>Due Dates</u>	<u>Record No.'s</u>
Meindl #1-20	20	Aug. 27, 1972	39373-39392
Meindl #21-42	22	July 13, 1971	45405-45426
734 #1-12	<u>12</u>	Aug. 3, 1971	45463-45474
	<u>381</u>	TOTAL NUMBER OF CLAIMS	

DLC:ifs
January, 1971.

APPENDIX "F"

DIAMOND DRILL LOGS
BRONSON CLAIM GROUP

CORDILLERAN ENGINEERING Limited — DIAMOND DRILL RECORD

PROPERTY BRONSON CLAIM GROUP

HOLE No. 1

DIP AND AZIMUTH TEST		
Corrected		
Footage	Angle	Azimuth
250	+9	207°
500	-28	229.5° * NR
700	-35	204° * NR
1000	+23	224°

Core Size AQ
 Angle of Hole +5°
 Claim Bronson #17
 Section
 Bearing 206°

Total Depth 1107'
 % Recovery 98.9
 Elev. Collar 6850'
 Latitude 58° 11' North
 Departure 125° 18' West

Sheet No. 1 of 11
 Logged by D.L. Cooke & M.H. Sanguinetti
 Date Begun June 30, 1970
 Date Finished July 17, 1970
 Core Stored At Property

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
		<u>SUMMARY</u>						
0 - 28.5'	0'	Diabase dike - chilled margins, sheared along margins.						
28.5'-303.0'	1'	Shale, slate, argillite, siltstone - fine interbedding, greenish grey, grey, black. Calcareous in part, abundant slump and ripple structures. Some pyrite seams along beds. Slatey cleavage well developed.						
		44.5'-45.8' - Fault gouge at 45° to core axis.						
303.0'-339.4'	1.5'	Diabase dike - chilled margins, trace disseminated pyrite.						
		327.0'-327.5' - Fault gouge at 50° to core axis.						
339.4'-1107'	9.75'	Shale, slate, argillite, siltstone - as above						
		688.7'-692.3' - Core lost - possible fault?						
		749.6' - Mud seam - possible fault?						
		END OF HOLE - 1,107 feet.						
		* NR - Not Reliable						

CORDILLERAN ENGINEERING LIMITED — DIAMOND DRILL RECORD

PROPERTY BRONSON CLAIM GROUP

HOLE No. 1 SHEET No. 2 OF 11

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
0' -25'	0	Diabase dike - dark green, massive with weak foliation 30°-40° to core axis. 1/8" to 1/2" greenish carbonate seams + actinolite at 70° to core axis. Trace disseminated pyrite. Foliation due to shearing!						
25' -28.5'	0	Diabase dike as above - some chilling and 30° foliation a foot from contact - Lighter green in colour. Note 1" quartz-carbonate veinlet at contact.						
28.5'-46'	0	Finely banded siltstone and argillite - Bands 1/10" to 1/4", grey, black, and greenish grey. Non-calcareous. Bedding at 15°-30° to core axis. Note tiny hairline fractures at about 45° to core axis offsetting bedding 1/4" distance. Some hairline quartz-carbonate seams present; some up to 1" wide at 40°-50° to core axis. Fault 1 1/4' wide at 45° at 44.5' to 45.8'.						
46' -69.4'	0	Finely banded siltstone and argillite - except more grey in colour and less green. Bedding now 10°-20° to core axis. Rock is still argillaceous and moderately calcareous. Note numerous 1/16" quartz seams every 1/2" to 3" at 45° to core axis, and in a plane of about 25° to 30° off the bedding plane. (cleavage plane?)						

CORDILLERAN ENGINEERING LIM. ID — DIAMOND DRILL RECORD

PROPERTY BRONSON CLAIM GROUP

HOLE No. 1

SHEET No. 3 OF 11

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
		A few 1/10" to 1/4" blebs of disseminated pyrite.						
69.4'-91'	0'	Finely banded siltstone and argillite - but with fewer carbonate seams. Note after 70' - bedding shows tiny ripples that look like soft sediment slumping in miogeosynclinal environment.						
91' -101'	0'	Lighter grey - definitely soft sediment slumps to give rock wispy fragmental nature. Also calcareous. Pyrite nodules still present. Fragments become smaller and less abundant between 98' and 101'.						
101' -295.5'	.5'	Grey, non-calcareous argillite - Fine banding. Bedding 20° to core axis. Cleavage-slatey at 45° to core axis, as well as a few tiny quartz stringers. Minor ripply slump structures at 127'-133' with trace pyrite as nodules. Slumps at 145'-146', 140'-141' with 1/8" quartz seams with pyrite cubes. Bedding at 140'-160' is about 30°-35° to core axis. Note 1/4"-1/2" dark band 160'-186' - noncalcareous. Overall alternating sections of (a) grey, massive siltstone to argillite, (b) finely interbanded black and grey argillite, and (c) wavy & streaky black and grey (slump ripples) argillite.						

CORDILLERAN ENGINEERING LIM. ED — DIAMOND DRILL RECORD

PROPERTY BRONSON CLAIM GROUP

HOLE No. 1

SHEET No. 4 OF 11

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
		238.5' - 1/16" quartz seam at 50° to core axis representing offset between grey massive section from interbanded grey & black section.						
		260' - 270' - Bedding changes from 25° to about 5°-10° to core axis.						
		270' - 292' - Bedding & rippled bedding at 0°-5° to core axis.						
		292' - 295.5' - Baked, sediments, bedding looks worm-like and varies from 20°-45° to core axis. Numerous 1/16" quartz carbonate stringers 65° to core axis every 1/4" to 2".						
295.5'-299'	0	Fine-grained greenish grey leucocratic rock- may be re-crystallized grey siltstone with blebs of massive pyrite up to 1 cm across.						
299' -303'	0	Greenish grey interbanded argillite to siltstone with numerous hairline offsets at 65° to core axis.						
303' -339.4'	1.5	Diabase dike 303'- 304.5'- chilled margin with minor disseminated pyrite. Quartz carbonate seams 1/2" wide at 303' and 304'-65° and 45° to core axis respectively.						

CORDILLERAN ENGINEERING LIM. ID — DIAMOND DRILL RECORD

PROPERTY BRONSON CLAIM GROUP

HOLE No. 1 SHEET No. 5 OF 1

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
		311', 314' 319' - One inch quartz epidote, serpentine stringers at 45° to core axis.						
		322' to 323.5' - Broken, one foot recovered						
		326.5' to 329.5' - Abundant epidote, some quartz and carbonate at 60°-90° to core axis.						
		327' - 327.5' - Broken, gougy asbestiform section at 50° to core axis. Probable fault within dike.						
		338.0' - 338.6' - Pale greenish grey chilled margin. Angle of contact uncertain						
		338.6' - 338.9' - Quartz carbonate seam with green altered sediments.						
		338.9' - 339.4' - Chilled dike finger - greenish grey colour.						
339.4'-357.6'	6"	Dark grey siltstone & black argillaceous siltstone to argillite - interbanded (1/16" to 1/4"). Bedding at about 20°-30° to core axis. Slatey cleavage and hairline quartz seams (1/32") at 55° to core axis.						
357.6'-455'	0	Interbanded grey & black siltstone and argillite at 20° to core axis. Sections of ripple-like flow structure 363'-366' sections uniformly bedded. Non-calcareous						
		410'-430' - Bedding at 30°-35° to core axis.						
		436' - Hairline offset of bedding and slump structures (calcareous).						

CORDILLERAN ENGINEERING LIM. ID — DIAMOND DRILL RECORD

PROPERTY..... BRONSON CLAIM GROUP.....

HOLE No. 1 SHEET No. 6 OF 11

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
455' -465.8'	3"	455'-455.5' Light coloured calcareous slump structures i.e. 1/2" small scale turbidites - with 1" perfectly interbedded dark grey & black.						
		455' - 465.8' Light coloured with calcareous slump 1/4" every 2" to 6". Bedding at 40° to core axis.						
465.8'-560'	6"	Similar to above, but lighter grey in colour and slightly calcareous. Bedding at 27°-30° to core axis.						
		465.8' - 471' Very little dark interbanded argillite.						
		471' - 525' + Dark bands & ripply slump structures - calcareous throughout.						
		525' + 560' Grey & black bands less calcareous than whitish grey rippled bands. Bedding at 30° to core axis.						
560' -560.5'	0"	Slump breccia with subrounded calcareous fragments in grey & black argillaceous matrix.						
560.5'-570'	0"	Interbanded grey siltstone & black argillite, plus irregular calcareous and ripple-like slump structures. Bedding 30°-35° to core axis.						

CORDILLERAN ENGINEERING LIMITED — DIAMOND DRILL RECORD

PROPERTY..... BRONSON CLAIM GROUP.....

HOLE No..... 1..... SHEET No..... 7..... OF 11.....

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
570' -576'	0"	Massive light grey calcareous band.						
576' -649'	0"	Interbanded, finely bedded slatey black argillite and greenish grey siltstone (both non-calcareous) & interbands of ripple-like calcareous arenite? with minor disseminated pyrite + rust eg. 589'.						
		588' - 6" massive grey calcareous band.						
		615' - Bedding at 40° to core axis calcareous						
		After 625' - less calcareous.						
		634' - 1/4" calcite stringer 60°-65° to core axis.						
649' -843'	5.9'	Alternating thin bands of black and light grey argillite, slate, shale, frequently banding is rippled, sloughed. Relatively calcareous lighter grey bands of argillite. Bedding at 650' - 655' at 42°						
		660.4'-661' - hairline fracture fillings of quartz-calcite, discontinuous at 90°						
		662.2', a 1/8" calcite veinlet at 15°						
		665', bedding at 42°						
		668.4'-669.1' is 1/8" quartz-calcite veins with limonite stains sub-parallel to veins						
		670' - banding at 42°						
		688.7'-692.3' core lost, banding 672' at 40°						
		677' at 45°, 688' at 42°						

CORDILLERAN ENGINEERING LIM. ID — DIAMOND DRILL RECORD

PROPERTY..... BRONSON CLAIM GROUP.....

HOLE No. 1..... SHEET No. 8..... OF 11.....

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
		677.3'-678.2' - brecciated with hairline calcite.						
		692.6' is irregular 1/4" quartz calcite stringer at approximately 12° and intersecting sediments approximately perpendicularly						
		695' - banding at 42°						
		699-699.6' - arkosic (?) with black organic shale blebs, all parallel to bedding at 45°						
		700'-800' bedding at 40°-43° some irregularities such as slumping flows.						
		725.2'-726.3' is irregular calcite fracture filling at 50° some fracturing at 10° to axis around 716'.						
		749.6' - possible mud seam.						
		752.9'-753.6' and 755.0-755.2' numerous thin 1/16"-1/4" quartz calcite stringers at 35-50° frequently offset by fractures and ribbonary						
		776.8' - fine pyrite cubes and 1/8"-1/4" pyrite concretions along banding at 43°.						
		792'-793.5' and 795', occasional 1/8" quartz carbonate veinlets perpendicular and at 40° parallel to bedding, unmineralized.						
		795'-810.3' some slump and change in dip of bedding to 50°-70°, fine pyrite bands up to 1/4" wide, mostly dark grey argillite with organic "flecks"						
		810.3' bedding reverts to 40°-45°						

CORDILLERAN ENGINEERING LIM. ID — DIAMOND DRILL RECORD

PROPERTY..... BRONSON CLAIM GROUP.....

HOLE No. 1..... SHEET No. 9 OF 11

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
		836.8'-841' fine ribbony bands of quartz and calcite generally at 40°.						
843'	-851'	Dark grey slightly limy carbonaceous argillite (?) banded at approximately 70°-90° banding marked by shaley hairline layers.						
851'	-895'	Alternating thin layers of shale and argillites banded at 40°-45°, some pyrite "lenses" of 1/4"-1/2" and nodules up to 1/4".						
895'	-993'	Predominately very fine grained light to dark grey irregularly banded, slightly calcic arkose (?) fine pyrite throughout and in 1/4" nodules and narrow bands.						
		908' - 1/4" quartz-calcite veinlet at 25°						
		913.8' - 1" quartz-calcite veinlet at 40°						
		Frequently swirl banding.						
		926.6' - 1" quartz-calcite veinlet at 47°						
		This "arkose" alternates in 2' - 1/8" sections with argillite, shales etc. at 45°-47°, with the bedding angle increasing to 50° about 990'.						
993'	-1005'	0.5' Alternating fine layers cut by 1/8" to 1" veins of quartz and calcite of 2 ages. Larger ones cut at 10°-20° and are slightly vuggy, narrow set cut at 40°-60° bedding, where consistant						

CORDILLERAN ENGINEERING LIM. ID — DIAMOND DRILL RECORD

PROPERTY..... BRONSON CLAIM GROUP.....

HOLE No. 1..... SHEET No. 10..... OF 11.....

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
		is 40°-50° shales adjacent to veins are light green and frequently deformed.						
1005'	-1042' 0.3'	Alternating fine layers of black fine grey shales, argillites at 50°-55°, 1062.5'-1065.2' pyritized section at 50°.						
1042'	-1107' 2'	Interbanded greenish-grey, grey and black argillites and siltstones. 1/32" to 2" bands. Bedding 55° to core axis. Minor ripple structures.						
		1062'-1066' - Pyrite, streaks parallel to bedding planes - 0.5%						
		1068'-1068.5' - Slump structure in contact with very fine bedding - Turbidite?						
		1069'-1071' - Black, massive argillite with 1/10" blebs of pyrite-disseminated.						
		1072' - 1/2" to 1" quartz-carbonate stringer 5°-25° to core axis in greenish grey argillaceous siltstone.						
		1077' - 1/4" pyrite seam at 80° to core axis.						
		1080'-1087' - Badly broken - No shears, but cleavage fractures at 70° to core axis. 2' lost.						
		1101'-1102' - Moderately fractured, weakly rusty zone at approximately 5°-10° to core axis.						

CORDILLERAN ENGINEERING LIM. D — DIAMOND DRILL RECORD

PROPERTY BRONSON CLAIM GROUP

HOLE No. 2

DIP AND AZIMUTH TEST		
Corrected		
Footage	Angle	Azimuth
0	+30°	160°
200	+32°	174°
400	+38°	190°

Core Size AQ
 Angle of Hole +30°
 Claim Bronson #17
 Section
 Bearing 160°

Total Depth 657°
 % Recovery 98.8
 Elev. Collar 6850'
 Latitude 58° 11' North
 Departure 125° 18' West

Sheet No. 1 of 9
 Logged by D. L. Cooke
 Date Begun July 18, 1970
 Date Finished August 1, 1970
 Core Stored At Property

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
		<u>SUMMARY</u>						
0	-81.0' 1.5'	<u>Diabase Dike</u> - Chilled and sheared margins Minor disseminations of pyrite.						
81.0'	-433.9' 4.5'	<u>Shale, slate, argillite, siltstone</u> - Fine interbanding, calcareous. Abundant ripple and slump structures. Slatey cleaved. Pyrite seams along some beds.						
433.9'	-450.5' 0'	<u>Diabase Dike</u> - Chilled margins.						
450.5'	-657' 2.5'	<u>Shale, slate, argillite, siltstone</u> Interbanded, calcareous, slatey cleaved. Convoluted, ripple and slump structures. Pyrite seams along argillaceous beds						
		END OF HOLE - 657 Ft.						
		ASSAYS - None						

CORDILLERAN ENGINEERING LIMITED — DIAMOND DRILL RECORD

PROPERTY BRONSON CLAIM GROUP

HOLE No. 2 SHEET No. 2 OF 9

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE					
0' -81'	1.5'	Diabase dike with 1/2% disseminated pyrite and magnetite. Massive, dark green, chloritized with minor 1/4" to 3/4" quartz-carbonate + chlorite stringers at 10°-40° to core axis							
		-3', 13', 15', 20', 47', 58', 67.5'							
		80'-81' - Chilled, light green 30° contact?							
		Narrow, hairline shears at 30° to core axis.							
81' -81.5'		Irregular mixture of quartz, carbonate and chlorite - veinlike at 30° to core axis.							
81.5'-83.5'		Fine-grained chilled dike margin.							
83.5'-129'	.5'	Mainly greenish grey siltstone and argillite interbanded with lighter coloured calcareous sediments. Bedding at 35° to 40° to core axis.							
		84.7'-85.0' - <u>Shear</u> with quartz-carbonate material. Attitude uncertain.							
		86.5' - Quartz-carbonate stringer							
		95.4'-95.6' <u>Gougy shearing</u> parallel to bedding plane, at 40°-45° to core axis. <u>May be fault</u>							

CORDILLERAN ENGINEERING LIM. ID — DIAMOND DRILL RECORD

PROPERTY..... BRONSON CLAIM GROUP.....

HOLE No. 2.....

SHEET No. 4 OF 9.....

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
130' -218'	.5'	Interbanded 6" to 2' sections of grey ripple marked argillaceous sediments and finely banded greenish grey and dark siltstone to argillite. Hairline carbonate seams along cleavage fracture every 1" to 1'. Bedding at 35° to 40° to core axis. Minor 1"-2" slump structures at 148', 149', 149.5', 151', 152', 153.5', 155.5', 156', 158', 160', 163' 166.5'. 181' - 3" of ground core 166' and 177' - 2" fragmental as at 129'-130' i.e. slump structures parallel to bedding at about 30°-35° to core axis 172'-191' - Lost about 2" - moderately broken 193' - 218' - Coring perfectly, bedding at 30° to core axis.						
218' -246.5'	1'	- ditto - mainly calcareous, bedding at 30°-35° to core axis. 224.5' - specks of pyrite 237' - 1/10" - 1/4" mud seam - minor fault ? parallel to cleavage i.e. approximately 35° to core axis. 246.1'-246.2' - Shear at 40°-50° to core axis.						

CORDILLERAN ENGINEERING LIMITED — DIAMOND DRILL RECORD

PROPERTY BRONSON CLAIM GROUP

HOLE No. 2

SHEET No. 6 OF 9

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
335' -395'	0'	-ditto-						
		Note 1/4" calcareous streaks parallel to bedding and spaced every 1/4" to 1". Bedding now at 37°-38° to core axis.						
		340' - Rusty 1/8" seam with pyrite - broken up.						
		346' - 1/4" barren quartz-carbonate veinlet at 38° to core axis and parallel to bedding.						
		365.5', 380.5', 384' - 1/10" quartz-carbonate seam plus trace rust and pyrite. Parallel to cleavage and to bedding.						
		388' - 1" band of carbonate stringers - parallel to beds.						
395' -399'	0'	Massive grey argillite with 1/16" dark organic or argillaceous fragments.						
399' -429'	.5'	Interbanded light grey calcareous argillite, black argillite and slate. Bedding is at 40° to core axis.						
		415'-429' - Well cleaved with 1/16" quartz-carbonate stringers + rust parallel to cleavage. Spaced every 1"-3" at 55° to core axis.						

CORDILLERAN ENGINEERING LIMITED — DIAMOND DRILL RECORD

PROPERTY BRONSON CLAIM GROUP

HOLE No. 2

SHEET No. 7 OF 9

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
429'	-433' .25'	Grey, altered sediments as above. Good cleavage and quartz-carbonate seams. Due to intrusive action of dike?						
433'	-433.9' 0'	Quartz-chlorite veiny material at 35° to core axis.						
433.9'	-450.5' 0'	Diabase dike - chilled margins over approximately 2'. Contact at 35° to 45° to core axis. Green chloritic and white quartzitic stringers are irregularly dispersed. 444' - Green mud seam at 10°-20° to core axis 450' - Asbestiform shear at 50° to core axis						
450.5'	-452' .25'	Green, altered, bedded argillaceous sediments. Badly broken along cleavage plane 1/4"-1/2" apart.						
452'	-471' 0'	Greenish grey interbedded slate, and argillite with abundant quartz-carbonate seams parallel to cleavage at 45° to core axis. Bedding is 35° to core axis. 464.5' - 3/4" white band and black layers.						
471'	-480' 0'	Massive grey argillite with tiny organic or argillaceous specks.						

CORDILLERAN ENGINEERING LIMITED — DIAMOND DRILL RECORD

PROPERTY..... BRONSON CLAIM GROUP.....

HOLE No..... 2..... SHEET No..... 8..... OF..... 9.....

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
480'	-551'	0.5'						
		Interbanded grey and black argillite, slate and shale. Bedding at 45° to core axis.						
		529'-530', 525'-526' and 527.5'-528'						
		Grey argillite with black organic or argillaceous specks.						
		546' - Bedding at 52° to core axis.						
		534' - 3" core ground						
		538' - 538.5' Badly cleaved and broken.						
551'	-576'	0'						
		Mainly massive grey argillite with black organic or argillaceous specks. Badly broken along cleavage planes. Sections of grey and black bedded argillite and slate (6" - 12") slump and soft sediment flow structures throughout. Bedding at 50° to core axis.						
576'	-651'	0'						
		Mainly grey and black interbanded argillite shale, slate. Bedding 50° to core axis Non-calcareous. A few massive argillaceous sections with black specks. Fine black slatey bands also present.						
		613' - 2" section, bleached + minor rust present.						
		618' & 625' - 6" sections with disseminated pyrite and pyrite in 1/10"-1/4" carbonate stringers - irregular.						

CORDILLERAN ENGINEERING LIM. ED — DIAMOND DRILL RECORD

PROPERTY..... BRONSON CLAIM GROUP.....

HOLE No. 3..... SHEET No. 2 OF 8.....

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
0' -44.5'	2'	Diabase dike - chloritized, with 6" sections of abundant asbestos, quartz, chlorite, carbonate between 14' and 18'. These are 20° to 50° to core axis. Negligible rust on joints 16' and 20' - possible <u>minor faults</u> - asbestos at 35°-55° to core axis. 42.5' - 44.5' - Chilled contact at 30° to core axis and parallel to cleavage. 1" quartz-carbonate vein at contact (44.5')						
44.5'-63.5'	2'	Altered, greenish argillite with strong slaty cleavage at 30° to core axis. Bedding partially destroyed by intrusion of dike Tiny quartz-carbonate veinlets parallel to cleavage at 42° to core axis. Badly broken up along cleavage planes 56'-60' - 2 ft. lost. Some rust 55.5' to 56.1')- Gouge zone at 45° 60.0' to 60.2')to core axis. <u>Fault</u> 64.0' - 1/2" quartz-carbonate seam at 38° to core axis. Note also shears approximately 1/10" wide zone.						
63.5'-97.5'	0'	Interbanded grey, greenish grey and dark grey argillite, slate with 1/8" to 1/10" quartz carbonate seams at 30°-35° to core axis. Bedding at 30° to core axis in different						

CORDILLERAN ENGINEERING LIM. ED — DIAMOND DRILL RECORD

PROPERTY..... BRONSON CLAIM GROUP.....

HOLE No. 3.....

SHEET No. 3 OF 8.....

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
		plane approximately 10° to plane of seams.						
		Cleavage at 45° to core axis. Some pyrite and rust along cleavage and irregular fractures.						
		84'-84.5' - Light-coloured section with pyrite and rust.						
97.5'-103'	0'	Dark grey to black argillite with vague ripple-like and fragmental texture. Light grey streaks, within, are calcareous.						
103' -270'	1'	Interbanded 6" - 2' sections of dark grey ripply argillite, grey slate and argillite and greyish to greenish massive siltstone.						
		120'-121' - Soft sediment slump structure.						
		136' - 1/4" quartz-carbonate seam at 30°-35° to core axis and parallel to bedding.						
		163' - Bedding at 30° to core axis.						
		164'-165.5' & 181.5'-183' - Grey argillite with specks of black organic or argillaceous matter.						
		186'-186.5' - Ground core.						
		202' - Bedding at 38° to core axis.						
		208' - 211' - Soft sediment slumps in grey argillite with black specks. Grey to white calcareous lenses parallel to bedding.						
		223'-232' - Grey massive argillite with black organic or argillaceous specks. A few light						

CORDILLERAN ENGINEERING LIM. ID — DIAMOND DRILL RECORD

PROPERTY BRONSON CLAIM GROUP

HOLE No. 3 SHEET No. 4 OF 8

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
		coloured fragments also present.						
		237'-239' - Fine cross-bedding or terminated bedding, may be graded colourwise.						
		246'-247' - Irregular pyrite pods on beds.						
		252.7' - 1/2" <u>Mud seam</u> parallel to cleavage - possible minor fault						
		258' - Bedding at 40° to core axis.						
270'	-287.5' 0'	Interbanded as above. Calcareous lenses (light grey) now 1" to 6" thick. Note irregular hairline fractures and trace pyrite along cleavage planes. Tiny quartz-carbonate seams also present. Cleavage 53° to core axis. Bedding at 42°.						
287.5'	-300' 0'	Interbanded grey and black argillite with abundant hairline quartz-carbonate veinlets at 52°.						
300'	-305' 0'	-ditto-, but bleached due to intrusion.						
305'	-347' 0.5'	<u>Diabase dike</u> , chilled margin at 50° to core axis. Epidotized, plus quartz, carbonate, chlorite seams & veinlets.						
		310.5' - 1" green mud seam probable minor fault.						

CORDILLERAN ENGINEERING LIMITED — DIAMOND DRILL RECORD

PROPERTY BRONSON CLAIM GROUP

HOLE No. 3 SHEET No. 5 OF 8

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
347'	-347.5' 0'	Quartz carbonate vein at 40° to core axis and trace malachite and secondary chalcocite.						
347.5'	-348'	0' Dike-sediment breccia - Fine grained dike and quartz-carbonate material approximately 50° to core axis. Abundant disseminated pyrite.						
348'	-431'	1' Interbanded greenish grey argillite and dark grey argillite - Strong cleavage at 67° to core axis. Bedding at 48° to core axis at 350'-360'. Bedding at 40° to core axis at 380'. 412'-413' and 421'-422' - 1/10" quartz-carbonate veinlets with pyrite at 70° to core axis. 426' - 1" to 2" white band - calcareous.						
431'	-434'	0' Grey argillite with tiny black organic or argillaceous specks.						
434'	-499'	1' Interbanded grey and black argillite, and light grey interbands. Bedding 48° to core axis at 450'. Bedding 50° to core axis at 475'. 472'-474' - Grey argillite with black specks. 462' - Light coloured bleached grey band: 6"						

CORDILLERAN ENGINEERING LIMITED — DIAMOND DRILL RECORD

PROPERTY..... BRONSON CLAIM GROUP.....

HOLE No..... 3..... SHEET No..... 6..... OF..... 8.....

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
		450'-500' - Light greyish white bands are 1/10" to 1" thick and occur every 1" to 2" - strongly calcareous. Bedding at 52° to core axis at 500'.						
		492'-493' - One ft. core ground.						
499'	-548'	0.5' Interbanded grey, dark grey and black argillite and 1'-3' sections of grey and black argillite with black specks.						
		550' - Bedding at 55° to core axis.						
549'	-567'	0.5' Interbanded 1/4" to 2" layers of greyish white and black argillite. Black argillite shows sharp contact on one side and vague on the other - suggesting graded bedding. (colour change only). Also cuts off bedding lines of greyish bands (cross bedding?) Abundant pyrite seams and blebs. Ground 6" core where slaty cleavage is strong.						
567'	-690'	1' Interbanded grey, dark grey and black argillite. Some dark bands colour graded.						
		600' - Bedding at 55° to core axis.						
		600'-606' - Six inches of core ground,						
		634' - 1" patch with finely disseminate pyrite.						
		654'- 655' Minor slump structure and fine-grained pyrite.						

CORDILLERAN ENGINEERING LIMITED — DIAMOND DRILL RECORD

PROPERTY BRONSON CLAIM GROUP

HOLE No. 3

SHEET No. 7 OF 8

DEPTH	CORE LOST	DESCRIPTION	SAMPLE No.	WIDTH OF SAMPLE				
		665' - Bedding at 52° to core axis.						
		672'-690' - A few quartz-carbonate stringers and irregular fractures at 10° and 45° to core axis.						
		680' - 2" to 3" irregular quartz filled fractures - network filling.						
690' -691'	0'	Bleached buff with dark irregular patches - slump like structures.						
691' -737'	23.25'	Interbanded greenish grey, grey and black argillite. Moderate cleavage, No prominent fracture zones; no faults! Bedding at 55° to core axis.						
		696' - Vuggy 1" carbonate seam 45° to core axis.						
		697' - 1/2" quartz-carbonate veinlet at 10" to core axis.						
		697'-697.5' - Core ground 6" lost.						
		699.5' - 1/2" quartz-carbonate veinlet at 10° to core axis.						
		704'-706' - Moderately fractured greenish grey (altered?) sediment with minor carbonate seams. 3" ground at 705.5'						
		713' bedding at 56° to core axis.						

APPENDIX "G"

MAPS AND DIAGRAMS

FIGURES 2-20

(UNDER SEPARATE COVER)

APPENDIX "H"

WRITER'S STATEMENT OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

1. I am a geologist residing at 334 Francis Road, Richmond, B. C., with an office at 1418 - 355 Burrard Street, Vancouver.

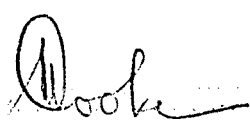
2. I graduated with a B.Sc. degree in Geology from the University of New Brunswick, Fredericton, N.B. in 1959; and received a Master of Arts degree in Geology from the University of Toronto, Toronto, Ontario, in 1961. In 1966 I graduated from the University of Toronto with a Ph.D. degree in Geology.

3. I am a certified member of the Association of Professional Engineers in the Province of British Columbia.

4. I am the author of this report.

5. I supervised the work performed in the Churchill-Racing River Area for Windermere Exploration Ltd. (N.P.L.) which is described herein.

Signed: _____


D. L. Cooke, Ph.D., P.Eng.
Geologist

November 23, 1970
Vancouver, B. C.