680853

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

CHURCHILL - RACING RIVER PROJECT - 1969

Lat. 57° to 59° N. Long. 124° to 126°W

94-K, Liard M.D., B.C.

Report by

P.H. Sevensma, Ph.D., P.Eng.

PETER H. SEVENSMA CONSULTANTS LTD.

December 20, 1969.

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WINDERMERE EXPLORATION LTD., (N.P.L.)
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Report by

P. H. Sevensma, Ph.D., P.Eng.

1. INTRODUCTION

This report is an evaluation of the project conducted during 1969 by Windermere Exploration Ltd. (N.P.L.) on map sheet 94-K. An extensive examination under fair to good weather conditions was made of the area on September 6th and 7th, 1969 by helicopter, Mr. L. P. Duquette of Windermere Exploration acting as guide.

This project covered a 2000 square mile area, containing two known copper deposits of commercial grade and size, under active development, Churchill Copper and Davis Keays.

Latest reported reserves of these deposits are as follows:

a. Davis Keays. (as of October 15, 1969)

	Tons	%Cu
Proven	378,450	5.31
Probable	382,381	5.58
Possible	882,967	5.60
Total	1,643,798	5.50±
Inferred	517,252	5.03
Total	2,161,050	5.40±

b. Churchill Copper. (as of end 1968)

Proven and Probable: 1,034,600 tons @ 4.01% Cu.

The writer examined a number of showings discovered by Windermere, some of which were sampled, some showings held by others and features of general geological interest thought to be meaningful in assessing the economic potential of Windermere's work.

Extensive use has been made of the data compiled by Windermere and presented by Mr. A. F. Reeve, P. Eng., of Cordilleran Engineering Ltd., in his report of November 15, 1969.

This project has been eminently successful in discovering at least two targets of probable economic significance, in locating a number of showings of interest and in discovering certain limited areas where significant occurrences are very likely to be present.

2. HISTORY AND REFERENCES

Some of the showings in this district were known in the 1940's; first descriptions were provided by M. M. Menzies in 1951.

In 1958 - 1959, initial drilling was conducted by Magnum Copper in the Racing River area, indicating 570,000 tons @ 5.14% Cu, and by Fort Reliance in the Toad River area, where 2961' of drilling outlined scattered occurrences of about the same grade.

Since that time, activity has gradually increased, culminating in the Davis Keays discoveries about 1967 - 1968 and the recent production decision by Churchill Copper, where a 750 tpd mill is expected to start up in March 1970.

Specific references are as follows:

M. Y. Williams G.S.C., Preliminary Paper 44 - 28A

M. M. Menzies Masters Thesis U.B.C., 1951

J. R. Vail — Masters Thesis U.B.C., 1952

G. Taylor — G.S.C. map 28 - 1963, MacDonald Creek, 94-K-10
G.S.C., Paper 68 - 15

Churchill Copper — Cdn. Mines Handbook, 1969 - 1970

Dr. F. D. Forgeron - Report on Windermere Project, Nov. 5, 1969

A. F. Reeve, P. Eng. - Report on Windermere Project, Nov. 15, 1969

Davis Keays - G. Cross N.L., Dec. 4, 1969

3. PROJECT CONCEPT

The project was conceived as a grass-root exploration program within a dome of Precambrian sediments cut by steep basic dykes associated in places with known commercial copper-mineralization.

This Precambrian dome covers an area extending from the Alaska Highway, mile 436, in a SSE direction for about 60 miles. Greatest width is about 40 miles.

The program was planned and executed as follows:

1. Literature study of all known copper occurrences
2. Photogeological study on a scale of 1" = 4 miles.
3. Selection of target areas on the basis of geological structure.
4. Stream silt sampling at a sample density of about one per square mile.
5. Geological reconnaissance and prospecting
6. Staking
7. Limited trenching and rock sampling.
8. Data compilation.

4. PROJECT ORGANIZATION

Office preparation was completed before the field-season, and from May 22 - September 23 a base-camp was in operation adjacent to the Churchill Copper Access Road where it crosses Wokkpash Creek near its junction with the Racing River. An 11 man crew and a helicopter were used during the four field-months. Three two-man prospecting teams occupied 16 fly camps.

Main services provided were:

Management: Cordilleran Engineering Ltd.

Field Manager: Mr. L. P. Duquette

Geochemical Services: Bondar - Clegg & Co.

Air Support: Bronson Aero Services Ltd.

Geochemical Computation: Dr. F. P. Forgeron and C.D.P.

5. PROJECT LOCATION AND ACCESS

The area is centered on about 58° 25' N Lat. and 125° 15' W Long. in an area of rugged topography with low-lying broad main valleys at about 3500' elevation, with some peaks exceeding 10,000' in elevation.

The Churchill Copper Road provides easy access to the core of the area by 15 road-miles from mile 401 on the Alaska Highway; which point is 100 road-miles WSW of Fort Nelson, B.C., the rail-head of the P.G.E. railroad extension now under construction.

Two other gravel roads service the area from mile 420 and mile 440 on the Alaska Highway. Further internal road-access can be gained relatively easily.

The timber-line is at 4700' and glaciers reach down to 6000'. Annual precipitation is low at about 20". The summer season extends from early June to mid-September.

Water is abundant, but timber is somewhat stunted, except in the lower valleys.

6. REGIONAL GEOLOGY

a. Lithology and Structure

The core of the area is formed by Late Proterozoic fine grained clastics with minor limey beds, intruded by numerous N to NW trending gabbroic dykes with steep dips, from 10' - several 100' wide and very persistent along strike. The lithological sequence is reminiscent of the Purcell further South, with which the writer is well acquainted and which contains gabbroic type lavas in the Siyeh formation.

The attitudes of the clastics vary from relatively flat to steep; in general the folding is broad and open.

The Proterozoic sequence is the exclusive host of both the dykes and all 97 known copper occurrences. About 50% of the project area is underlain by this sequence.

In the SW quarter of the area, moderately metamorphosed slates and argillites may represent the later Windermere Formation. In places, the Proterozoic is overlain by reddish brown-purplish conglomerates and sandstones, usually a few tens of feet thick, but up to 3000' thick in the Roosevelt Peak area. Elsewhere, this formation is absent.

Palaeozoic, quite flat lying, grey carbonates up to 6000' thick overlie the older formations unconformably. Some thrust plates of Mississipian - Devonian black shales occur within the carbonates in the NE part of the area. The carbonates have been identified as Pre-Silurian by some authors.

The structural high formed by the Proterozoic dome may be interpreted as a NNW trending anticlinorium with minor overturning. The Pre-Silurian carbonates appear to fill a more local structural depression, identified by G. Taylor of the G.S.C. as the Racing River Synclinorium.

To the East, the Rocky Mountain Thrust Fault, striking NW and dipping SW, brings the Proterozoic - Palaeozoic in contact with the later Foothills sediments.

To the South, a strong NE trending fault appears to limit the Proterozoic.

b. Intrusives

The gabbroic dykes, mostly from 10' - several 100' wide, dip steeply and trend more or less parallel to the strike of the sediments, but in general somewhat more Northerly.

They occur only in the Proterozoic; their walls show no contact metamorphism.

In some instances, these dykes are somewhat braided. In general, they are believed to be controlled by pre-dyke faults.

Structural complications, like marked changes in strike of the dykes, appear to be favorable loci for copper deposition.

7. ECONOMIC GEOLOGY

Copper occurs principally as relatively fine grained sheets and pockets of chalcopyrite within quartz-carbonate veins. Bornite, pyrite, and chalcocite are less common; galena occurs occasionally in accessory veinlets.

All 97 known occurrences are very consistent in character.

Veins often occur in subparallel swarms, or vein systems. They are very persistent along strike, but may pinch or swell from a few inches to several tens of feet. Most dip steeply, but dips down to 30^{o} have been observed.

The most promising and persistent veins observed strike Northeasterly, are near-vertical and appear related to a marked change in the strike of nearby gabbroic dykes.

Some veins follow dyke-contacts.

The veins often stand out either as dykes by a high quartz content, or as chocolate-brown malachite-stained zones. The structure and character of the wallrocks does not appear to affect the character of the vein material noticeably.

From all his observations, the writer has concluded that the veins are post-gabbro and probably of Late Proterozoic Age.

The grade across the full width of the veins varies from vein to vein, but tends to be relatively uniform in any one vein. Those veins that make ore, show a very high proportion of material of average grade, i.e. from 3 - 6% Cu.

In the Davis Keays veins, which are strong and straight, the full volume of the veins appears minable. Grade-distribution in the Churchill Copper veins is not well known to the writer.

The Davis Keays veins cut the topographical slopes at a large angle, whereas the Churchill Copper veins forms an outcrop about parallel to the hillside.

Both these situations have therefore more easily observable outcrops than those veins cutting a mountain face at a small angle as is the case in the Bronson, Gataga and Meindle veins, the best discoveries todate of Windermere Exploration Ltd. Veins near the valley bottoms are difficult to trace visually or by trenching, but are expected to respond to geophysical detection if economic amounts of sulphides are present.

After examining a number of occurrences both on the ground and from a helicopter, a quite reliable estimate can be made from the latter, by the intensity of the Chocolate-brown weathering and of the malachite staining, whether a vein is of the low grade ($\pm$1% Cu) type or of the commercial grade (3 - 6% Cu) type.

For instance, the inaccessible showing at the SW-end of the Bronson vein is clearly a good-grade occurrence estimated to be at least 15' wide.

It is the writer's opinion that the NE trend of the productive veins is significant and fully in agreement with NE trending controls of mineralization observed elsewhere in the Cordillera. In this area, this NE direction may be used as one of the main geological guides to mineralization. Intersection of NE and $\pm$N-S veins could form large high high grade shoots.

8. GEOCHEMICAL RECONNAISSANCE

2640 stream sediment samples were taken in 2000 square miles, for 1.3 sample per square mile. 1874 were utilized for statistical analysis.

The -80 mesh fraction was analyzed for copper by the biquinoline test after hot HCl extraction in the field, and by atomic absorption after hot aqua-regia extraction, in the laboratories of Bondar - Clegg & Co. Ltd. in Vancouver, B.C.

Computer analysis and contouring showed 92 of the 97 showings to be within the statistical geochemical highs, and the threshold to anomalous areas clearly follow the Proterozoic host rock, with two exceptions: a. an area of black schists shows an anomaly and

b. one high lies within the Windermere formation.

Surface conditions are alpine, leading to pronounced mechanical dispersion, but the presence of carbonate rocks produces an alkaline environment which tends to retain the copper.

The distribution of the samples taken was quite regular, with good spacing at about one mile intervals.

Basic data obtained are as follows:

Background	12 ppm Cu	Standard Deviation	24.6
Mean	25.4		

Contour interval was 12 ppm and the following categories emerged:

Negative	0 - 23
Possibly Anomalous	24 - 35
Probably Anomalous	36 - 60
Definitely Anomalous	60 ppm
Peak Value:	200-500 (0.8% of samples)
	10520 (one sample)

The plot of the copper in stream sediments, of the showings, of the geology and of the dyke swarms exhibits the best relationship between the first two, the distribution of the latter two being more extensive than the distribution of the showings.

Some copper deposits were found by prospecting which do not have a geochemical expression. Combined visual and geochemical reconnaissance led to the discovery of 73 new deposits.

In summary, the geochemical reconnaissance proved to be a highly successful guide, even in the presence of a low level of anomalous values of only 60 ppm and over.

The total area selected for extension and intensification of regional prospecting is about 755 square miles. Disclosure of these areas at this time is not in the interest of Windermere Exploration Ltd. Five sub-areas have been selected, containing several geochemical targets of an intensity greater than those associated with the most promising known showings.

A 7th degree trend of log copper concentrations in the stream sediments indicated three areas of maximum copper potential. Due to lack of data in the boundary areas of the survey, this result should be considered as only tentative at this time.

It may be noted that the total amount of copper per surface unit can be much greater in the presence of an abundance of small uneconomical deposits than where a single much larger economical deposit is the source of the dispersed copper.

In this respect, caution must be used in the application of the statistical method, which only takes into account the very basic facts of sample value and sample spacing.

Continuation of the use of geochemical reconnaissance is fully justified by the results obtained todate.

9. MINERAL DISCOVERIES

Study of 73 new showings led to staking of 13 separate groups for a total of 578 claims.

After further examination, 6 groups comprising 322 claims are recommended for abandonment and 7 groups, or a total of 256 claims, warrant further work. Two of the latter groups, covered by a total of 156 claims, warrant intensive exploration, including diamond drilling.

Our observations are confined to the latter two, which have both been visited, although very rugged topography precluded sampling of the best exposures in places.

Tables 1 and 2 show the result of our sampling and a statistical summary of Windermere's sampling in these two areas. Figures 2 - 4 illustrate the pertinent data.

Table 2 only summarizes results across widths sampled. Often, only part of the width could be sampled due to inaccessibility; in other cases, two samples were required to sample the full width. Silver and Gold values are of the order of 0.25 oz/t Ag and .015 oz/t Au and represent only minor credits.

The following remarks are pertinent to the evaluation of these data.

a. Meindle Vein See figure 5.

The figure of 5.1% Cu across 5.1' average width, for a length of 1800' sampled, is considered representative of the exposure, with a good probability for greater true width.

Detailed inspection from a helicopter, providing a good view of all exposures and of the painted sample points, showed the vein to be at least 5' wide in a minimum grade range of 3 - 6%. Landing on the ridge or climbing to the showing was impossible at the time due to icy conditions.

The NE trending Meindle Vein has an indicated size and grade of from 500 - 1000 tons per vertical foot of about 5% Cu, with good possibility for extensions; its structure is somewhat patchy.

The NE strike of this vein is the same as the strike of the minable veins in this district. This is a highly favorable factor.

b. Gataga, Book and 428 Veins

Sampling of these veins represents only a few sections about 100' long out of an aggregate length of 14,300'.

Further investigation of these three structures is warranted. They are presently evaluated as follows:

Gataga Vein: May be commercial in conjunction with the Bronson vein.

Commercial grade sections are narrow, but nearly all of the vein's anticipated outcrop-area is overburden covered. It may respond to a Crone EM survey if sufficiently mineralized.

Book Vein: This is a low grade vein (1 - 3%) over most of its length, but its higher grade section warrants additional investigation by some shallow drilling, after mapping and sampling of its Southern extension.

428 Vein: Grades are low, but the presence of an unusual green "shale" and of strong structural disturbances warrants further investigation by more detailed mapping and sampling.

All three veins strike N-S (428 NNW) and their potential is not considered as good as that of NE striking veins. All three are regarded as secondary targets.

c. Bronson Main Veins and Bornite Veins

These veins form a prime exploration target, with a focus of mineralization in the projected locus of intersection of the NE main veins with the NS bornite veins (Figure 3).

The float on the glacier North of Bronson Mountain is the most extensive high-grade copper float occurrence ever seen by the writer.

The feature illustrated in figure 4 was quite well observable by helicopter, but is only accessible to crampon-equipped professional mountaineers. The float sampled by the writer is derived from that part of the vein visible to the NE of the sampled area. The SW outcrop of the vein can be seen clearly from a helicopter, with abundant malachite strain and chocolate-brown weathering suggesting a minimum 5% Cu across an estimated 15'.

The 10 samples taken by a professional mountaineer on the Bronson Main vein were all visually inspected by the writer and estimated to average 5% Cu (actual 7.8%). The weight of these samples was about 1-lb. per 1' width, and all locations, marked in red paint were inspected by the writer by helicopter on September 6, 1969.

The writer's present estimate of the size and grade of the Main vein, based on visible exposures and on representative sampling of extensive float, and on sampling by Windermere, is as follows:

2000 - 5000 tons per vertical foot in the 5% - 8% Cu grade range.

To this may be added the potential in the general area where the multiple Main vein zone is intersected by the Bornite Veins, as indicated on figure 4. This could represent an area of 100' x 500', i.e. some 5000' tpvf in the 2% - 3% Cu range.

d. Other Discoveries

Five groups warrant further examination; two of these could reveal significant targets, and three groups have indications which may or may not be of interest (see figure 1).

10. MINING PROPERTIES

The discoveries are covered by the following mining claims, not including those recommended for abandonment:

Name	No. Claims	Record Nos.	Expiry Date
1. Gataga Group			
Gataga 1-20	20	40116-135	Sept. 24, 1970
Bronson 1-38	38	39808-845	July 25, 1970
" 39-52	14	40342-355	Oct. 3, 1970
" 54-93	40	40356-395	Oct. 3, 1970
428 1-14	14	40136-149	Sept. 24, 1970
Book 1-10	10	39393-402	Aug. 27, 1970
Subtotal	136		
2. Meindle 1-20	20	39373-392	Aug. 27, 1970
3. Marvin 1-20	20	34813-832	Feb. 6, 1970
" 21-28	8	40566-573	Oct. 16, 1970
4. Marv 21-36	16	34833-848	Feb. 6, 1970
5. Mar 37-40	4	34849-852	Feb. 6, 1970
6. Chopper 1-14	14	40328-341	Oct. 3, 1970
7. LMS 1-38	38	40528-565	Oct. 16, 1970
Total	256		

Some of the posts of the Meindle, the Book and the Bronson were inspected, and found to have been placed in accordance with the provisions of the B.C. Mining Act.

11. SUMMARY

The Windermere 1969 Project has located the following exploration objectives.

1. Bronson Veins. High probability to develop a mineable copper deposit, the surface exposures of which suggest a total range of 2,000 - 10,000 tpvf, with the smaller size in the 5 - 8% Cu range, and the larger size in the 3 - 5% Cu range.

2. Meindle Vein. Good probability to develop a mineable copper deposit, the surface exposures of which indicate a range of 500 - 1000 tpvf of about 5% Cu.

3. Other Deposits. Eight other deposits warrant additional preliminary surface exploration.

4. Potential Areas. Regional geochemical reconnaissance has indicated a remaining 750 square miles of good potential area, including some areas where stream silt sampling has revealed higher intensity anomalies than in the Bronson area.

5. These various objectives have been reached by an efficiently conducted exploration program within the boundaries of geologically favorable areas containing two known bodies of better than one million tons of 4% - 5% Cu, using both geological and geochemical guides.

A total of 97 copper occurrences are now known to Windermere Exploration in the area. The Bronson and Meindle discoveries are thus the result of a highly selective exploration technique.

6. A program is proposed to cover the following:

a. Intensive Property Exploration - Bronson & Meindle

b. Secondary Property Evaluation - 8 prospects

c. Regional Prospecting - 750 square miles

12. RECOMMENDED PROGRAM

A detailed exploration-budget has been prepared by Windermere Exploration Ltd., as follows:

1.	Wages, 23 menfieldstaff, total 121 man-months	$ 85,700.00
2.	Otter aircraft, winter freight, 7000 mi. @ $1.50	7,700.00
3.	1 Bell G3 B-1, 3 months @ $12,000.00	36,000.00
	1 Bell G3 B-1, 5 months @ $12,000.00	60,000.00
	Hiller FH-1100, 50 hours @ $240.00	12,000.00
4.	Access Road, bulldozer, 4 months @ $10,000.00	40,000.00
	SUB TOTAL	$241,400.00

	SUB TOTAL	$241,400.00
5.	Legal Surveys	15,000.00
6.	Blasting Crew (contract) 3 months @ $3,000.00	9,000.00
7.	Geochemical analysis, supplies, 3,000 samples	4,500.00
8.	Assaying, 500 assays @ $8.00	4,000.00
9.	Drilling, Bronson, 5,000' @ $11.00	55,000.00
	Meindle, 3,000' @ $11.00	33,000.00
10.	Camp operation, 175 man-months @ $120.00	21,000.00
11.	Camp construction, including radios	14,000.00
12.	Rental of vehicles & storage	8,300.00
13.	Fuel, aviation, 12,000 gallons @ 60¢	7,200.00
	Diesel, 8,000' of drilling, 2,400 gal @ 50¢	1,200.00
	Barrels, 100 @ $12.00	1,200.00
	Propane, naphta, truck gas, lubricants	1,850.00
14.	General freight	5,000.00
15.	Drafting services	3,000.00
16.	Travel: meals, hotel, fares	3,000.00
		$427,650.00
17.	Miscellaneous Office charges	24,800.00
18.	Geophysical Consulting	1,000.00
19.	Management & Geological Consulting, 10%	45,000.00
		$498,450.00
*	Contingency, 10%	50,000.00
	TOTAL BUDGET	$548,450.00

* A contingency of 10% is recommended by the writer rather than the original 5% budgeted by Windermere Exploration Ltd. in order to allow for continuing follow-up wherever economic success is obtained.

The allocation per project heading is estimated as follows, in round figures:

A.	Intensive Property Exploration		
		Bronson	$200,000.00
		Meindle	120,000.00
B.	Secondary Prospect Evaluation		
	8 prospects @ $7,500.00		60,000.00
C.	Regional Prospecting		
	Total cost		120,000.00
		Total Cost	$500,000.00
D.	Overall Contingency, 10%		50,000.00
		Total Budget	$550,000.00

The writer recommends this program as outlined, except for the detailed allocation of the provision for 8,000' of diamond drilling. It is recommended that approximately 6,000' be initially allocated to the Bronson Veins and 2,000' for the Meindle Vein, rather than the proposed 5,000'/3,000' split.

In the writer's opinion, sufficient drilling should be completed as soon as possible on the Bronson Veins to decide where underground exploration should start.

In view of the rugged topography, extensive exploration by surface drilling is not practical, and underground development in conjunction with drilling from underground openings is considered the most rapid and economical method to delineate proven reserves on this property.

The objective of the initial drill-program should be to determine as rapidly as possible the parameters required to site underground openings.

Respectfully submitted,

P.H. Sevensma, Ph.D., P.Eng.
PETER H. SEVENSMA CONSULTANTS LTD.

December 20, 1969.

WINDERMERE EXPLORATION LTD.

List of samples taken by P.H. Sevensma, P. Eng., on September 6 & 7, 1969.

Assay Report No. 8383 dated September 18, 1969, by Coast Eldridge.

Sample No.	Estimated weight in lbs.	Location	Width	Cu.	Ag.	Au.	Pb.
A 135	12	Float Bronson Vn.	Est. 5'-10'	9.18	.4	.02	-
B 136	4	Gataga Vn. in place	22"	4.97	.3	.01	-
C 137	4	" " " "	18"	4.89	.2	.01	-
D 138	6	Book Vn. in place	2'	5.42	.5	.02	-
E 139	2	HW Book Vn.	1½"	.38	1.9	.01	10.97

These samples represent the following chalcopyrite occurrences:

135 — Representative average grade of float taken over a length of about 1,500' and derived from a good size vein of from 1,000' - 3,000' long and of the order of 5' - 10' wide as estimated by inspection by helicopter.

136 & 137 — Narrow, lensy, discontinuous exposures of narrow vein, involved in faulting. Samples about 50' apart.

138 — Better grade South outcrop of strong continuous vein, most exposures of which are estimated to be of the order of 0.5 - 1% Cu. across 4'. Length of exposure about 1,200'.

139 — Narrow 1½" seam of galena checked for silver-lead ratio only. Located at South end of outcrop visible for a length of about 8'.

P.H. Sevensma

TABLE 1

WINDERMERE EXPLORATION LTD.

Churchill - Racing River Project 1969

Statistical Summary of Sampling Data

Vein	Sampled Width	Sampled Length	Strike	P.H.S. Samples No.	P.H.S. Samples % Cu.	W. Ex. Samples No.	W. Ex. Samples % Cu.	Average Grade	Indicated Length
1. Gataga Group									
Bronson Main	5.3'	500'	NE	1	9.18	10	7.83	8.5	5,000'
Bronson Bornite	2.25'	400'	N-S	0	-	6	15.08	15.1	700'+
Total	4.7'	900'		1	9.18	16	9.2	9.2	5,700'+
Gataga Vein	1.6'	2 x 100'	N-S	2	4.94	4	2.49	2.9	5,000'
Book Vein	2.2'	2 x 100'	N-S	1	5.42	1	1.33	3.1	4,300'
428 Vein	9.7'	100'	NNW	0	-	3	1.31	1.3	5,000'
2. Meindle Group									
Meindle Vein	5.1	1,800'	NE	0	-	15	5.1	5.1	2,000'+

TABLE 2

C E R T I F I C A T E

I, PIETER H. SEVENSMA, of 908, 1280 Haro Street, in the City of Vancouver, in the Province of British Columbia, DO HEREBY CERTIFY:

1. THAT I am a Consulting Geologist, with a business address at 715 - 850 West Hastings Street, in the City of Vancouver, in the Province of British Columbia.

2. THAT I am a graduate of the University of Geneva, Switzerland (Physics and Chemistry, 1937; Geology and Mineralogy, 1937) where I obtained my Ph.D. in Geological and Mineralogical Sciences in 1941.

3. THAT I am a Registered Professional Engineer in the Geological Section of the Association of Professional Engineers of the Province of British Columbia and of the Association of Professional Engineers of Yukon Territory.

4. THAT I have practiced my profession as a Geologist for the past 30 years.

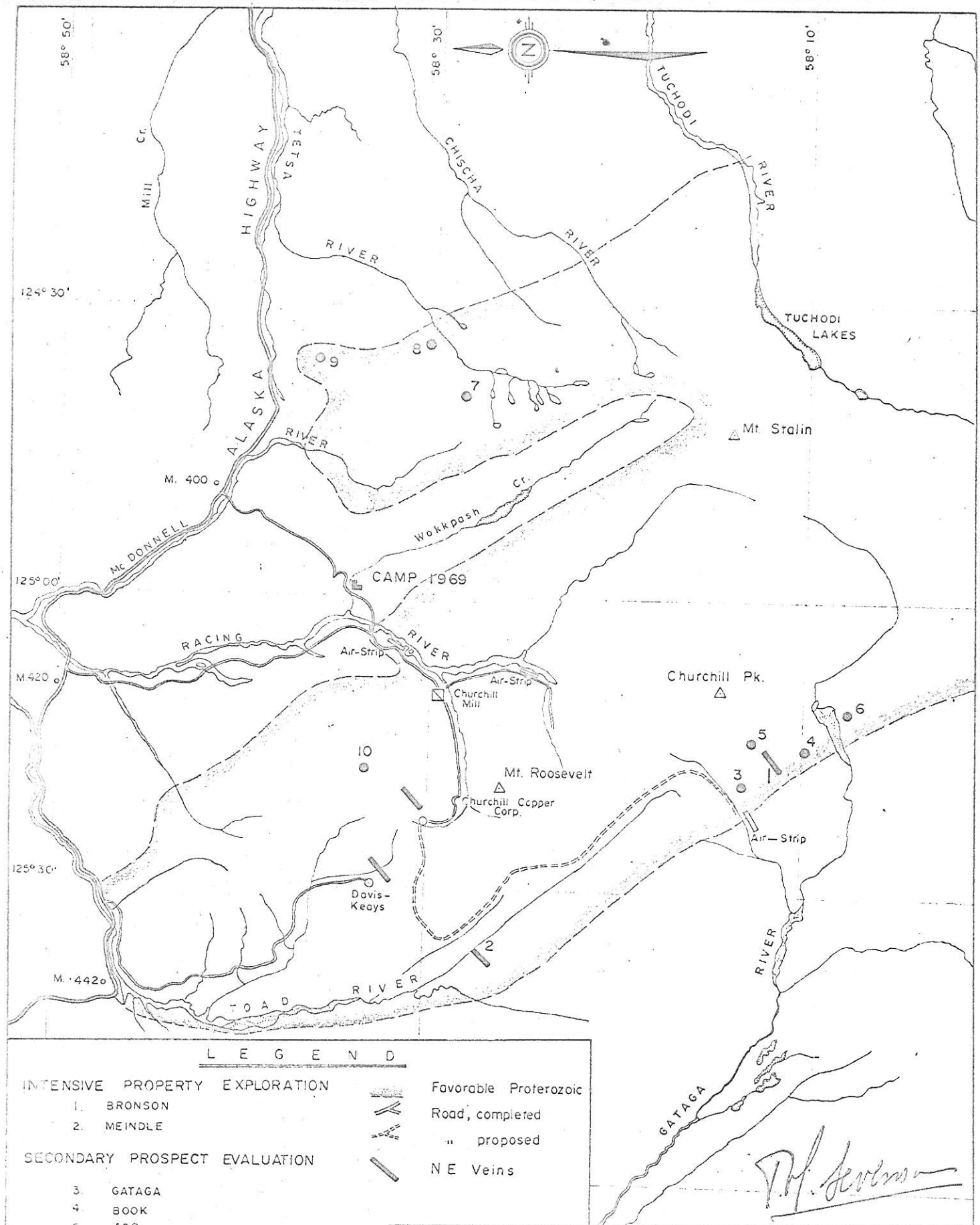
5. THAT I have personally examined the Project area described in my report of December 20, 1969, especially the Bronson, Meindle, Gataga, Book and 428 veins, as well as a number of other significant occurrences in the area, on September 6 and 7, 1969.

6. THAT I have no direct or indirect interest in any of the securities or properties of Windermere Exploration Ltd., nor do I expect to receive or acquire any.

DATED THIS 20th day of DECEMBER, 1969.

P.H. Sevensma

P.H. Sevensma, Ph.D., P.Eng.



L E G E N D

INTENSIVE PROPERTY EXPLORATION

1. BRONSON
2. MEINDLE

SECONDARY PROSPECT EVALUATION

3. GATAGA
4. BOOK
5. 428
6. CHOPPER
7. MARV
8. MARVIN
9. MAR
10. L M.S.

Favorable Proterozoic

Road, completed

" proposed

N E Veins

P. H. Sevensma

WINDERMERE EXPLORATION LTD.

LOCATION OF PROPERTIES

Liard M. D. — B C. 94 — K — 3

P. H. Sevensma Consultants Ltd. Vancouver, B.C.

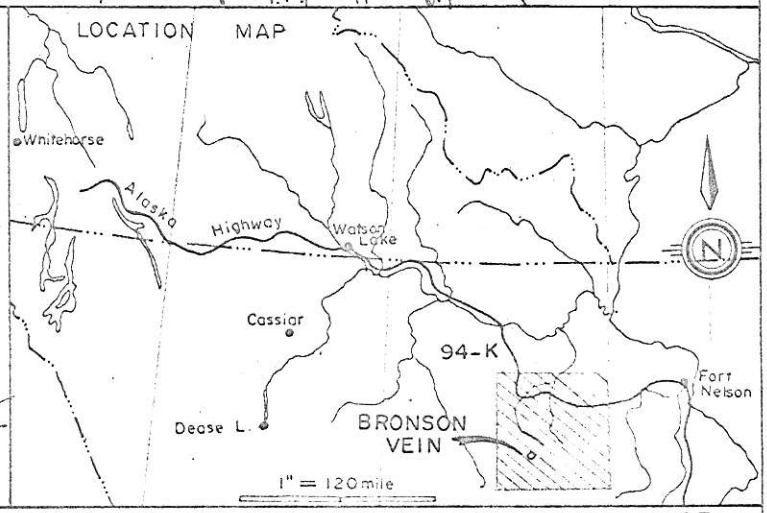
Dwg. No: Fig: 1

Dec. 1969, Scale: 0 8 miles

BCIL 2603 P.H.S.

LEGEND

- Gabbroic dykes
- Postulated fault
- Veins in place
- Float
- Ice
- Proterozoic clastics
- Contour lines.



P. H. Sevensma

Checked by helicopter by P. H. Sevensma, Sept 6/69.

Mapping by Windermere Exploration Ltd.

WINDERMERE EXPLORATION LTD.

BRONSON VEINS, GEOLOGY

Liard M.D.– B.C. 94– K' – 3

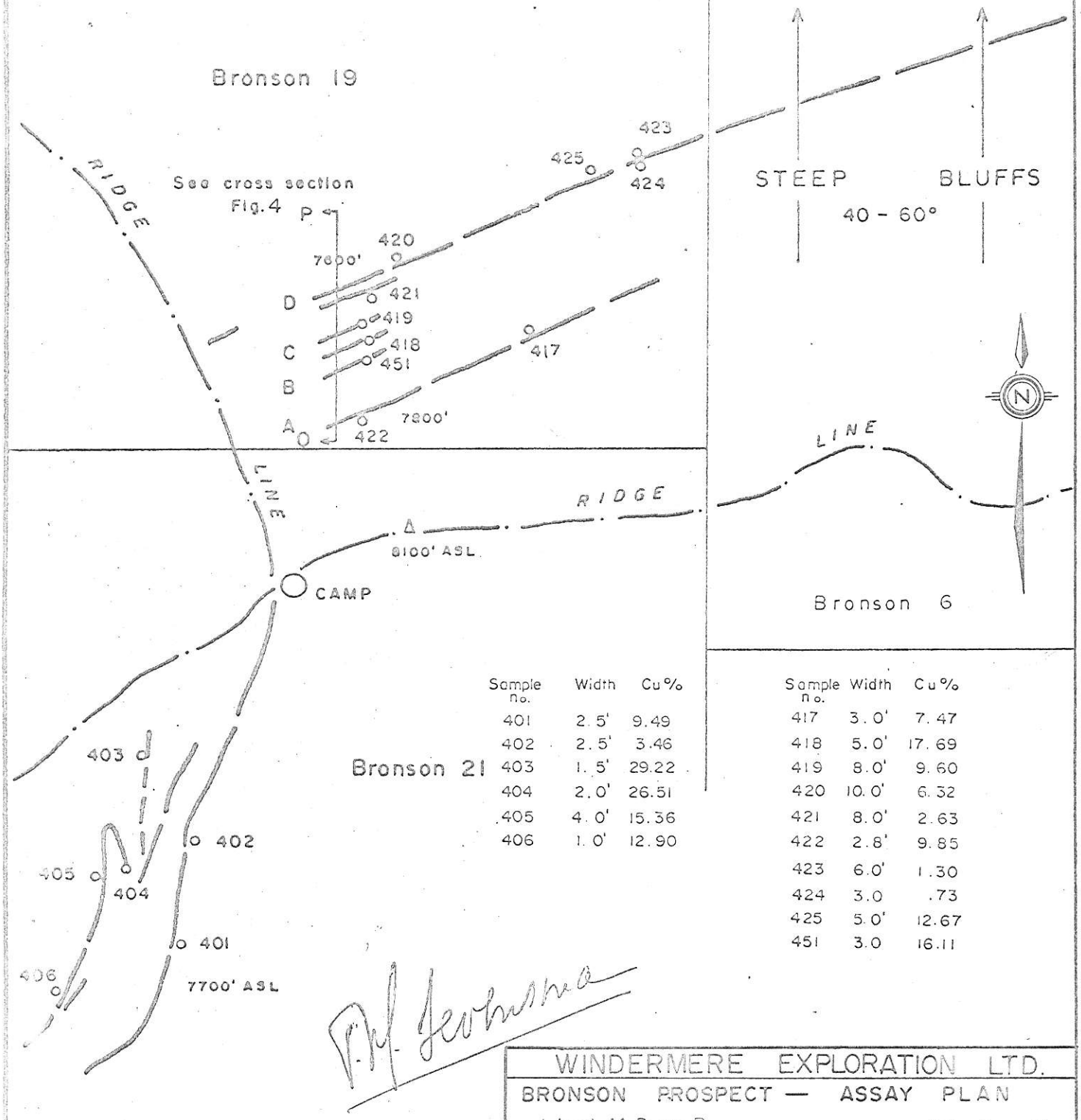
P. H. Sevensma Consultants Ltd. Vancouver, B.C.

Dwg. No.: Fig: 2

Dec. 1969, Scale: 0 1000'

COMPOSITE SAMPLE # 135

Taken from float train in valley 6100' ASL



Sample No.	Width	Cu %
401	2.5'	9.49
402	2.5'	3.46
403	1.5'	29.22
404	2.0'	26.51
405	4.0'	15.36
406	1.0'	12.90

Sample No.	Width	Cu %
417	3.0'	7.47
418	5.0'	17.69
419	8.0'	9.60
420	10.0'	6.32
421	8.0'	2.63
422	2.8'	9.85
423	6.0'	1.30
424	3.0	.73
425	5.0'	12.67
451	3.0	16.11

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WINDERMERE EXPLORATION LTD.

BRONSON PROSPECT — ASSAY PLAN

Liard M.D. — B. 94-K -3

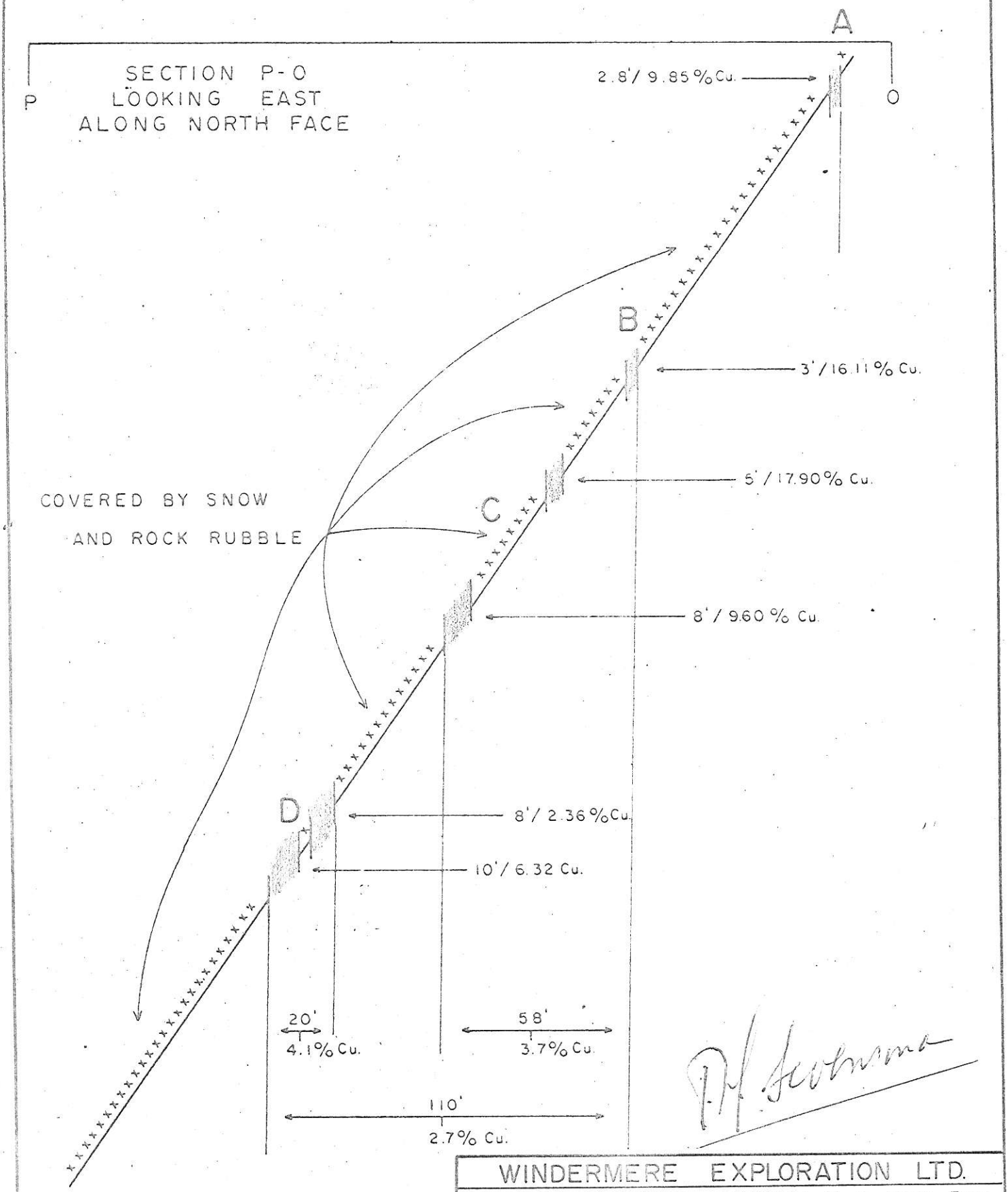
P. H. Sevensma Consultants Ltd. Vanc. B.C.

December 1969, Scale: 0 200'

For Windermere Exploration Ltd.

DRAWN BY L.P. DUQUETTE

FIG. 3



WINDERMERE EXPLORATION LTD.

BRONSON PROSPECT – SECTION P-O North Face

Liard M.D. – Y.T. 94 – K – 3

P. H. Sevensma Consultants Ltd. Vancouver B.C.

Dec. 1969, Scale: 0 40

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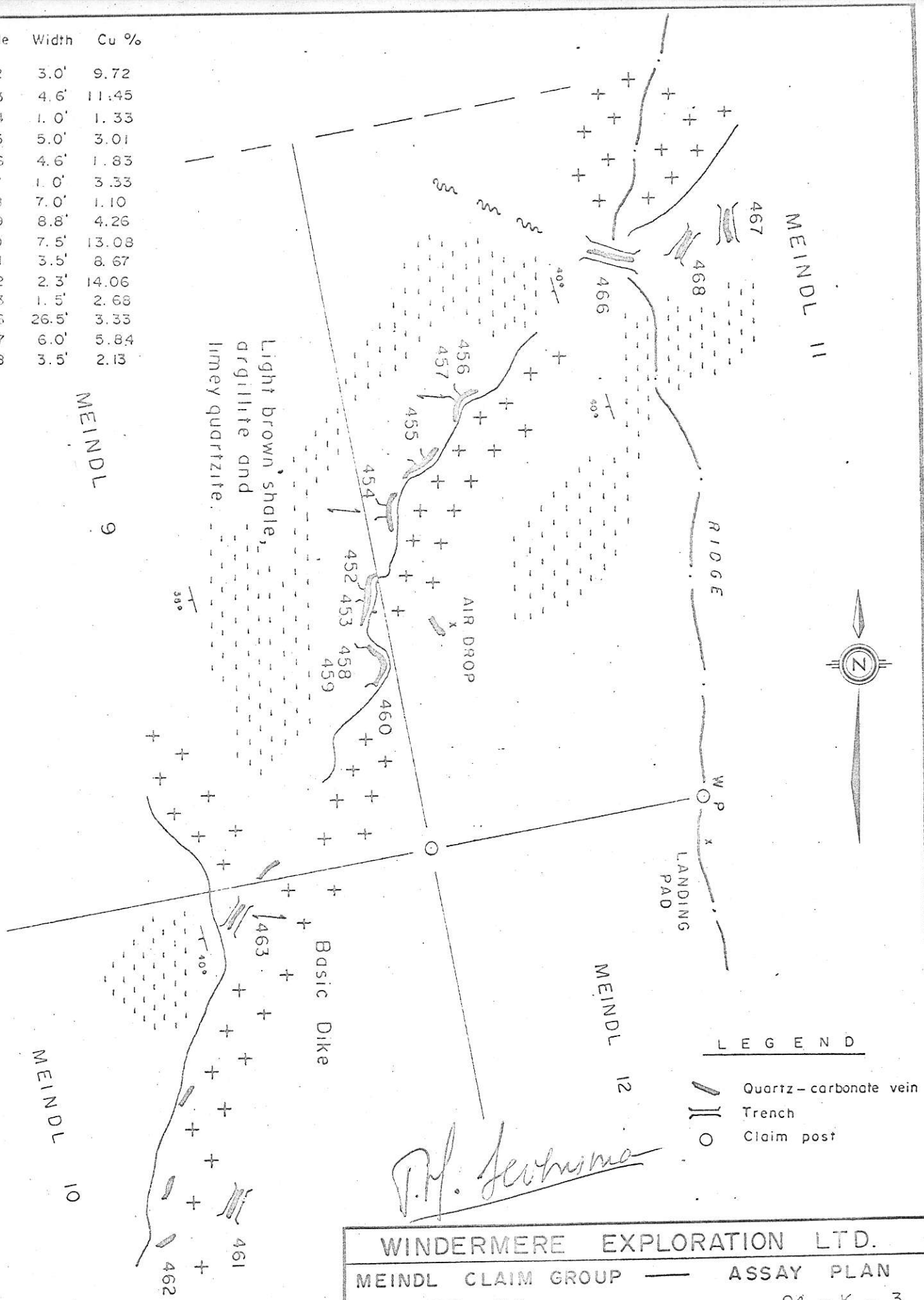
FIG. 4

Sample no.	Width	Cu %
452	3.0'	9.72
453	4.6'	11.45
454	1.0'	1.33
455	5.0'	3.01
456	4.6'	1.83
457	1.0'	3.33
458	7.0'	1.10
459	8.8'	4.26
460	7.5'	13.08
461	3.5'	8.67
462	2.3'	14.06
463	1.5'	2.68
466	26.5'	3.33
467	6.0'	5.84
468	3.5'	2.13



P. H. Sevensma

WINDERMERE EXPLORATION LTD.

MEINDL CLAIM GROUP — ASSAY PLAN

Liard M.D. — B.C. 94 – K – 3

P. H. Sevensma Consultants Ltd. Vancouver B.C.

Dec. 1969, Scale: 0 200'

For Windermere Exploration Ltd.
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FIG. 5