

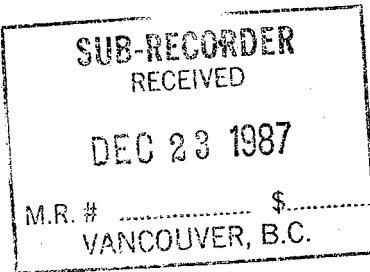
MINNOVA INC.

DIAMOND DRILL REPORT

CHU CHUA OPTION

BARRIERE AREA

KAMLOOPS MINING DIVISION, B.C.



92P/8E

Lat 51° 21'N

Long 120° 03'W

GEOLOGICAL BRANCH
ASSESSMENT REPORT

16,812

MICHAEL J. GRAY
Vancouver
Dec 1/87

TABLE OF CONTENTS

	Page No.
I. SUMMARY AND CONCLUSIONS	1
II. INTRODUCTION	2
II.1 Location and Access	2
II.2 History	4
II.3 Tenure	4
III. WORK CONDUCTED	6
IV. PURPOSE OF PROGRAMME	6
V. RESULTS	6
VI. RECOMMENDATIONS	8

LIST OF FIGURES

Figure 1 Location Map 1: 127,300	3
Figure 2 Property Map 1: 66,700	5
Figure 3 Drill Hole Locations (CCF-12,13,14) 1:2500	Pocket 1
Figure 4 Drill Hole Locations (CCF-15) 1:2500	Pocket 2
Figure 5 Drill Hole Locations (CCF-16,17) 1:2500	Pocket 3

LIST OF TABLES

Table II.3 Claim Tenure	4
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LIST OF APPENDICES

Appendix I. Itemized Cost Statement	
Appendix II. Statement of Qualifications	
Appendix III. Drill Logs	

I. SUMMARY AND CONCLUSIONS

The Chu Chua Property, located 20km NNE of Barriere, B.C., (NTS 92P/8E ; 51° 21'N, 120° 03' W), was optioned from Pacific Cassiar, Ltd., Quinterra Resources Inc., and Vestor Explorations Ltd. in August of 1985.

The 1987 diamond drill programme was carried out between the 15th of September and the 5th of October and consisted of six NQ holes totalling 852.15m.

The drill programme, designed to test Max Min conductors and favourable horizons, failed to intersect massive sulphide mineralization. It did, however, return Au values of up to 1050 ppb within an altered FQP rhyolite dome.

II. INTRODUCTION

The Chu Chua Property was optioned by Minnova Inc. (formerly Corporation Falconbridge Copper) in August of 1985. The property includes the Chu Chua massive sulphide deposit (estimated 2 million tonnes of 2% Cu) discovered in 1978. Minnova Inc. acquired the Chu Chua property because it offers good potential for further mineralization with higher grades of base and precious metals.

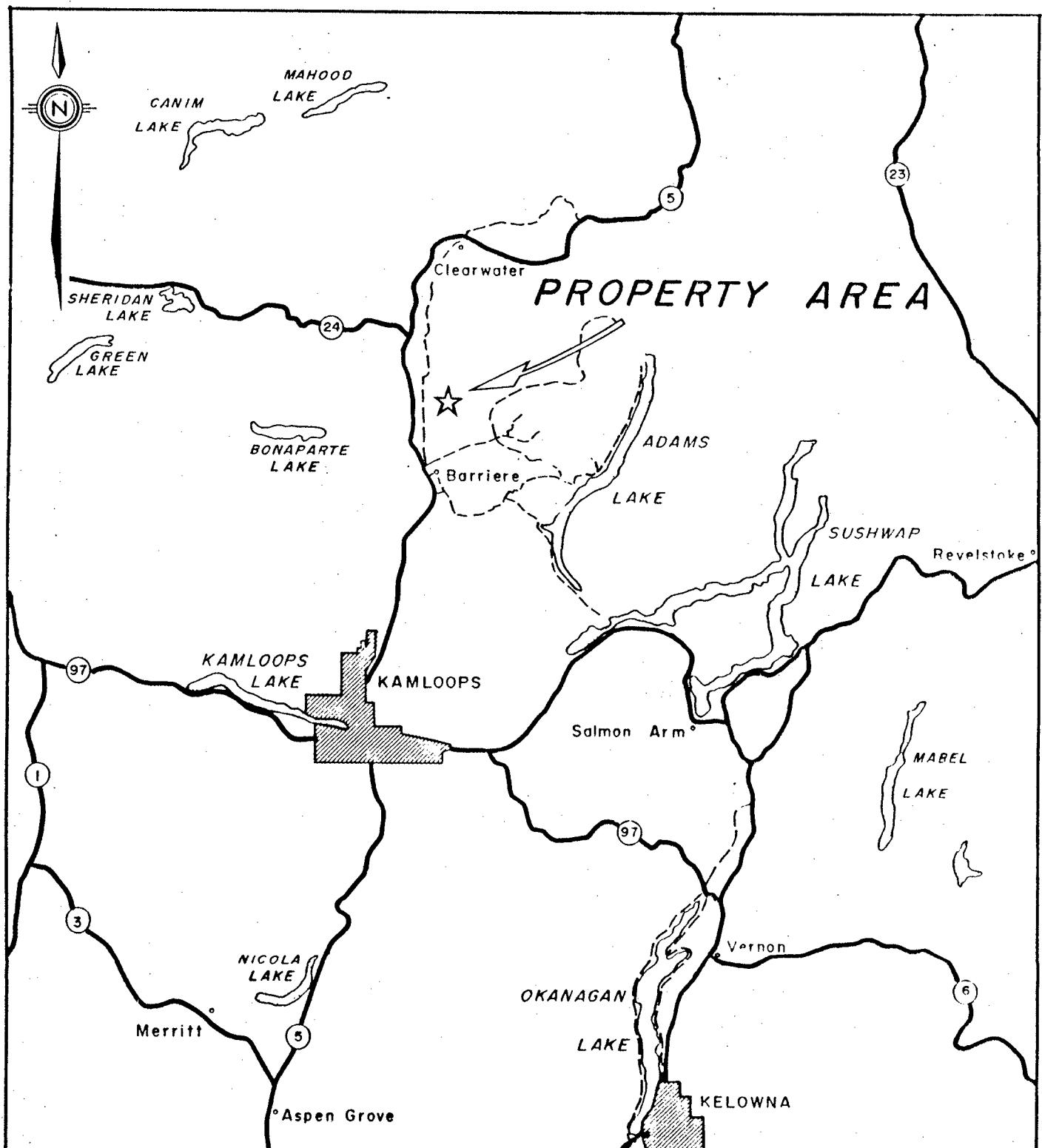
Fieldwork to date has included geological mapping, geophysical surveying and geochemical sampling over a large grid area. This report details the results of six diamond drill holes drilled between September 15th and October 5th, 1987 on targets thereby developed.

II.1 Location and Access

The Chu Chua property is within the Kamloops Mining Division, B.C., NTS 92P/8E. The property is located approximately 20km north-northeast of Barriere (Fig.1) centered on coordinates of 51° 21'N, 120° 03'W.

Access to the Chu Chua property is by the North Barriere Lake road (15km of paved and graveled road), then 12km along the Birk Creek logging road.

The property is in subalpine terrain with moderately steep to gently rolling topography and elevations ranging between 1500-2000m above sea level.



**- LOCATION MAP -
CHU CHUA OPTION**

-3-

II.2 History

The Chu Chua massive sulphide deposit (approximately 2 million tonnes grading 2% Cu) was discovered on claim CC1 by Craigmont in 1978. In 1979, a Dighem survey was flown over the area (Assessment Report, July 1979 Fraser and Dvorak). During 1979-1984 further geology, soil geochem and diamond drilling were carried out on the property without additional discovery.

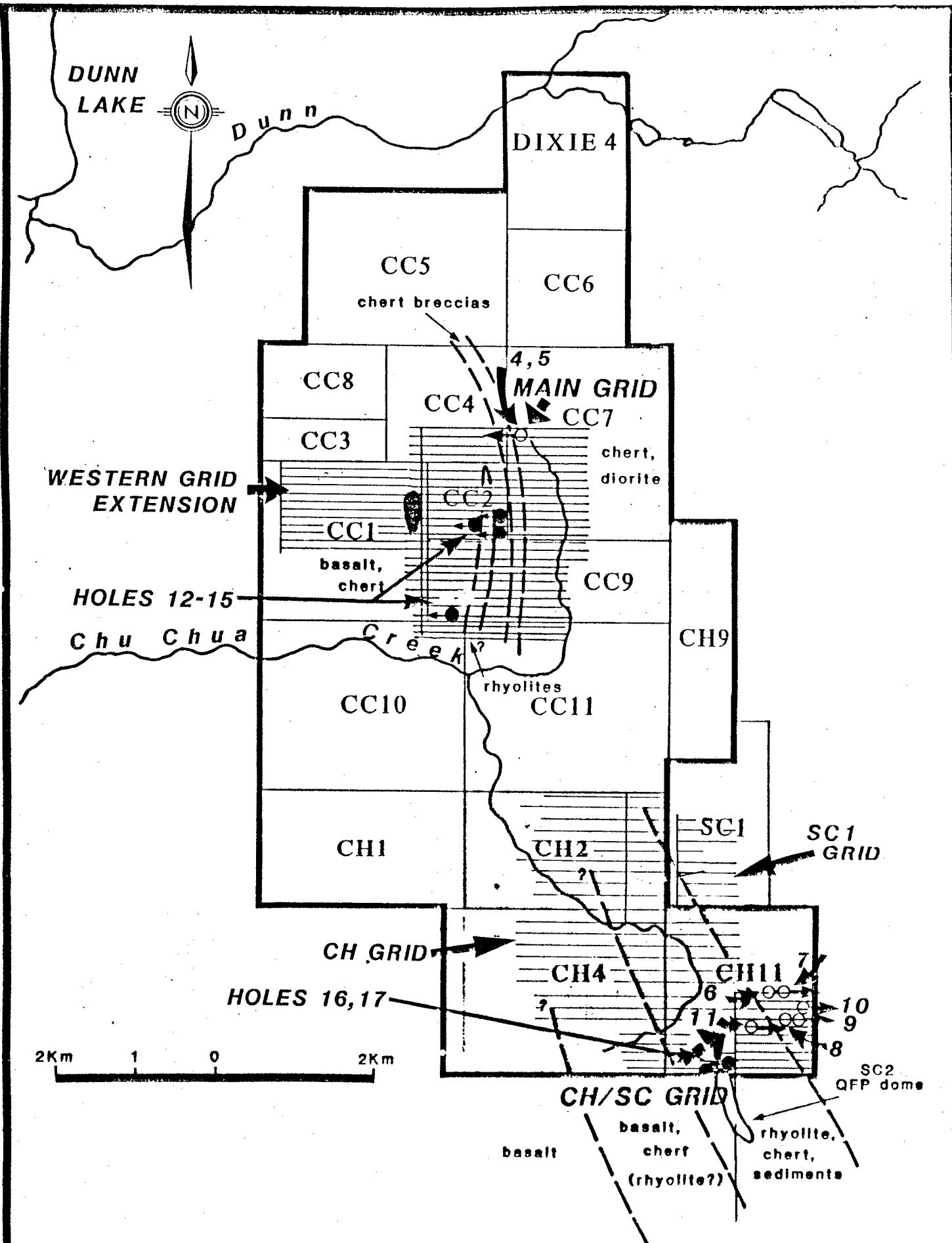
In August 1985, Minnova Inc. (CFC) optioned the Chu Chua property from Pacific Cassiar, Vistor, and Quinterra. Fieldwork in 1986 involved linecutting, geological mapping, geochem surveys and Max Min II surveys. This programme was followed-up by an eight hole diamond drill programme in the fall of 1986 to test the best targets.

II.3 Tenure

The Chu Chua property consists of 17 contiguous claim blocks which total 239 units. Pertinent claim data are listed in Table II.3.

Table II.3 Claim Tenure

Claim	No. of Units	Record No.	Group	Month	Expiry Date
CC1	16	1154	Deposit	3	2 March 1988
CC2	4	1373	Deposit	8	22 August 1992
CC3	3	1374	Deposit	8	22 August 1992
CC4	9	1423	Deposit	10	10 October 1992
CC8	6	1424	Deposit	10	10 October 1991
CC10	20	1459	Deposit	10	24 October 1991
CC5	20	1455	Green Mtn	10	24 October 1989
CC6	9	1456	Green Mtn	10	24 October 1988
CC7	20	1457	Green Mtn	10	24 October 1988
CC9	12	1458	Green Mtn	10	24 October 1988
CH9	12	1469	Green Mtn	10	24 October 1989
DIXIE 4	12	6858	Green Mtn	11	21 November 1987
CH1	20	1461	CH	10	24 October 1991
CH2	20	1462	CH	10	24 October 1988
CH4	20	1464	CH	10	24 October 1991
CH11	16	1471	CH	10	24 October 1991



III. WORK CONDUCTED

Six NQ diamond drill holes, CCF-12 through CCF-17 (852.15m), were drilled to test Max Min II conductors and specific geological targets. The drill programme was carried out from September 15th to October 5th, 1987. Drill core was logged by Karen Sutherland (CCF-12 through CCF-15), and Michael Gray (CCF-16 and CCF-17), and is presently stored in Barriere at the Minnova Inc. warehouse.

All geochemical and assay samples were analysed at Min-En Labs in North Vancouver by standard procedures.

IV. PURPOSE OF PROGRAMME

The purpose of the 1987 drill programme was to test stratigraphy in an area of Max Min II anomalies (Assessment Report, Dec. 1985, I.D. Pirie) and to test the stratigraphy flanking felsic domes. Drill hole locations are shown on Figures 3, 4 and 5, (see back pockets), superimposed on Max Min 1777Hz data.

V. RESULTS

Hole CCF-12 tested the flank of a rhyolite dome in an area of massive sulphide fragments. Weak sericite-pyrite alteration is present in the rhyolite but no significant base or precious metal mineralization was intersected.

CCF-13 tested the down-dip expression of an exhalite horizon. A four metre thick cherty interflow sediment (10% pyrite) was intersected

within a pillowved sequence of basalt.

CCF-14 tested the flank of a rhyolite dome in an area of massive sulphide fragments. The hole failed to intersect the rhyolite dome.

CCF-15 tested soil geochem anomalies flanking a Max Min conductor. A fault zone was intersected in dioritic intrusive rocks and may explain both the conductor and soil geochem anomalies.

Holes CCF-16 and CCF-17 tested the flanks of another rhyolite dome (Fig. 5). In CCF-16, a number of bleached pyritic alteration zones 0.5 - 3.0m thick were intersected within the FQP Rhyolite dome. Significant results from one altered section include 1.1g/T Au over 3.0m.

VI. RECOMMENDATIONS

It is recommended that fill-in detailed mapping and lithogeochemical sampling be conducted in the southern dome area (CCF-16 and CCF-17) to follow-up the Au potential within the rhyolite dome and develop further geological/geochemical targets on the flanks of the dome. The additional mapping and sampling would be followed-up by trenching and drilling.

In the area where CCF-12 through CCF-15 were drilled, a better understanding of the stratigraphy and structure through compilation of data and fill-in detailed mapping is required. This will provide the best direction and therefore target selection to test the stratigraphy in the future.

APPENDIX I
COST STATEMENT

ITEMIZED COST STATEMENT

DIAMOND DRILLING ... (Frontier Drilling Ltd.)		
Direct	852.15m @ \$54.94 = \$46817.12	
Materials, Manhours, etc.	15387.14	
	\$62204.26	
PREP OF TRAILS AND PADS		
(Sparrow Enterprises, Chase, B.C.)	5632.50	
WATER TRUCK (M. Purcha, Little Fort, B.C.)		
67 hours @ \$45	3015.00	
ASSAYS AND GEOCHEM		
(Min-En Labs., N. Vancouver)	1572.50	
SALARIES		
M. Gray	20 days @ \$250	
K. Sutherland	20 days @ \$250	
A. Ross	20 days @ \$150	
I. Pirie	3 days @ \$400	
	14200.00	
TRUCK	20 days @ \$50	1000.00
FOOD AND ACCOMMODATION	60 man days @ \$50	3000.00
FIELD EXPENSES		1500.00
MISCELLANEOUS (computer, typing, drafting, etc.)		1500.00
		=====
		TOTAL
		\$93624.26

APPORTIONMENT

GREEN MTN GROUP (CCF 12, 14, 15)		
428.5m of 852.15m = 50.3%	=	\$47093
CH GROUP (CCF 16, 17)		
275.2m of 852.15m = 32.3%	=	\$30240.64
DEPOSIT GROUP (CCF 13)		
148.45m of 852.15m = 17.4%	=	\$16290.62

APPENDIX II
STATEMENT OF QUALIFICATIONS

Statement of Qualifications

I, Karen Sutherland of Toronto, Ontario hereby certify that:

- 1) I graduated from Queen's University at Kingston with a Bachelor of Science Degree in Geology (1982) and an M.Sc. in Mineral Exploration (1987).
- 2) I am a geologist formerly employed, on a contract basis, by Minnova Inc. at 400-311 Water St., Vancouver, B.C.
- 3) I have been practicing my profession for the past 7 years.
- 4) I have no financial interest in the claims involved in this report, or in Minnova Inc.

Dated this 17th day of December, 1987.

**Karen Sutherland
Exploration Geologist**

Statement of Qualifications

I, Michael J. Gray, of Vancouver, British Columbia hereby certify that:

- 1) I graduated from the University of British Columbia with a Bachelor of Science Degree in Geology (1985).
- 2) I am a geologist employed on a temporary basis by Minnova Inc. of 400-311 Water St., Vancouver, B.C.
- 3) I have been practising my profession for the past 3 years and have been actively involved in mineral exploration for the past 7 years.
- 4) I have no financial interest in the claims involved in this report, or in Minnova Inc.

Dated at Vancouver, B.C. this 7th day of December, 1987.



Michael J. Gray

Exploration Geologist

Certificate of Qualifications

I, Ian D. Pirie certify that:

- 1) I am an Exploration Geologist residing at 4580 44B Ave., Delta B.C.
- 2) I have a BSc (Hons) in Applied Geology from the University of Strathclyde, Glasgow, Scotland (1977) and a MSc (Geology/Geochemistry) from Queen's University at Kingston, Ontario (1980).
- 3) I have practised my profession since 1977.
- 4) I personally supervised the work reported herein.

Date 17th December, 1987



APPENDIX III
Drill Logs

HOLE NUMBER: CCF-12

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: **METRIC UNITS: X**

METRIC UNITS: X

PROJECT NAME: CHUCHUA
PROJECT NUMBER: 321
CLAIM NUMBER: CC7
LOCATION:

PLOTTING COORDS GRID: MAIN
NORTH: 9650.00
EAST: 11315.00
ELEV: 1930.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 0.00

COLLAR DIP: -58° 0' 0"
LENGTH OF THE HOLE: 181.90m
START DEPTH: 0.00m
FINAL DEPTH: 181.90m

DATE STARTED: 0, 0 COLLAR SURVEY: N
DATE COMPLETED: 0, 0 MULTISHOT SURVEY: N
DATE LOGGED: 0, 0 RRD LOG: N

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NQ

CONTRACTOR: FRONTIER DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

HOLE NUMBER: CCF-12

DRILL HOLE RECORD

LOGGED BY: K. SUTHERLAND

PAGE: 1

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.37	CASING					
4.00 TO 28.80	CHERT INTERBEDDED W/ FELDSPAR CRYSTAL ASH TUFF	<p>Light green, grey Very fine grained.</p> <p>Bedded, contains up to 15% <1mm feldspar(?) crystals (locally clay altered?) rounded and occur in both the tuff and chert and appear to be more concentrated along contact zones. Locally chert beds are not continuous and may be brecciated as at 15.4m.</p> <p>Possible tops down hole from slump feature in chert bed.</p> <p>Bedding of chert, feldspar x t'ash and tuff</p> <p>(Fractures in chert) -----</p>	<p>Possible weak clay sericite in ash tuff and weak clay alt of feldspar xls (?)</p> <p>45 to 55 20 to 30</p>		<p>Locally tr-2% py as fine disseminated and blebs to 2cm as at 9.3m in both units and as diss py within fragments.</p>	<p>Blocky core for first 6m, minor rusty. Bands are 1cm to 5cm wide with constant core angle orientations and well defined contacts between bands (to sharp). Chert bands are fractured 25 to C/A but do not extend to ash beds. (Approx. 90deg to bedding). Chert very hard, ash tuff medium hardness fractures filled with black (very fine) hard (black chert?). Appears to be stronger tuffaceous component downhole with coarser feldspars? Phenos (round to 2mm) concentrated in the tuff (radiolaria?)</p>
28.80 TO 60.00	SED GRAPHITIC DEBRIS	<p>Black.</p> <p>Matrix fine, clasts variable.</p> <p>Matrix - 30%, very fine grained, black, gf argillite matrix supported (predominantly).</p> <p>Fragments - up to 80%, variable size from 1mm to 5cm, but generally <2cm subangular to subrounded.</p> <p>Variable frag composition from chert, minor tuff (ash felsic), gf argillite, cherty tuff, minor sulph. Minor broken veinlets carrying 1% diss. very fine py.</p> <p>@ 33.8 - 20 cm fragment.</p> <p>@ 35.6 .5m section of soft sed def and 3-5% diss, stringer and blebs of py.</p> <p>Approx. 40.5 3cm wide breccia conformable.</p> <p>47.8 Fracture parallel to C/A. Fractures appear weakly mottled and sericitic.</p>		<p>First m contains <1mm rounded phenos (feldspar? clay alt?)</p> <p>None of the frags appear alt'd except approx. 40.0m rim of white on 5mm fragment - calcite (mod fizz)</p> <p>57.5 - 3cm fragments of wky sericitized rhyolite with 10% flattened qtz eyes (may be d tuff)</p>	<p>1-5% - dominately occurs as <3mm blebs/fragments, rounded (py with tr cpy) and along minor fracture surfaces. Mainly finely diss in frags, matrix.</p> <p>@ 33.8 2 cm. mass sulphide frag (py with minor cpy)</p> <p>Tr.-1% po locally.</p>	<p>Moderately to strong conductive and cause of MAXMIN II conductor. Upper contact sharp but irregular with steep angle to C/A. Minor soft sed noted near top contact. No apparent sorting or bedding.</p> <p>Minor white <.5mm white veinlets.</p> <p>Approx. 38.3 - 46.00 - still debris flow but wk bedding or laminations 35 to 45 deg C/A. Locally 5mm sub rounded fragments with white (mm wide) alt?</p> <p>Contains very minor 3cm wide 'bed' with 5-8% py along bedding plane.</p> <p>46.4 - 46.8 Increase in fragments < 8mm. Minor 3cm black fragments with hydrofracturing.</p> <p>54.0 - 60.0 Increase in larger fragments and more cherty component.</p>

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
60.00 TO 96.30	BASALT/ ANDESITE	<p>Grey/green Fine grained. Hard, non-magnetic, no reaction with HCl.</p> <p>At 64.5 minor breccia and weak bleaching + mod. qtz flooding (possible pillow or halo.)</p> <p>Relatively fine grained until 66.5m then noticeable increase in chl(?) phenos to 15% (2mm) anhedral.</p> <p>At 72.25 minor pale green bleaching, 2cm wide silica 'vein' with tr py. -----</p> <p>At 72.25 start of noticeable increase in feldspar phenos to 15% <2mm and anhedral, white, looks dioritic in appearance. Very minor qtz + calcite. Massive - no apparent pillows.</p> <p>veins -----</p> <p>81.9 .25m interval hydraulic fracturing with infilling with silica (moderate bleaching)</p> <p>88.35 Minor bx, silica 'veins' ----- 1-3% py weak carbonate in veins <2cm.</p> <p>At 89.0 .5cm wide bx sharp contacts. Minor qtz veins. Fragments of basalt -----</p> <p>< 5mm cb and qtz veinlets. -----</p>	45 20 to 40 20 25 20 to 30	<p>5% chlorite blebs upper contact slight pinkish colour and finer grained (slightly baked).</p>	<p>tr - 1% py locally (as at 61.0) tr po (in bleached silica rich zone)</p>	<p>Upper contact defined at 61.6 very weak breccia zone (flow bottom breccia?) 3-5% qtz veinlets at variable orientation <3mm 20-40 deg to C/A. Minor carbonate veilets (x cuts grey qtz vein).</p> <p>At 62.7 3cm wide breccia zone. 30 deg to C/A tr py, sharp contacts.</p>
96.30 TO 165.50	RHYOLITE	<p>Grey/green. Fine grained. Massive but very poor core recovery due to fracturing. Very hard non-mag 10% qtz eyes, 10% feldspar phenos. No flow banding evident. Qtz eyes < 3mm dk, spheroidal to ellipsoidal.</p> <p>Feldspar phenos <4mm, generally anhedral but some euhedral, white with locally bleached rims and locally appear to be greenish in colour. Rock locally breccia due to alt? Assoc with hydrofracturing as at 110.33 & 123.3</p>		<p>Weak sericite (greenish appearance) and mod. silic. Rock locally has strong mottled appearance. Appears to be fracture controlled as weakly to mod. bleaching along fractures.</p>	<p>Tr 2%, as fine diss and <2mm blebs, generally along fracture surfaces. Tr cpy? (box 22) associated with phenocrysts.</p> <p>Sometimes sulphides assoc. with feldspar phenos (rimming).</p>	<p>Upper contact not visible due to blocky core but appears to be sharp.</p> <p>Poor core recovery - core is very blocky. Fractures generally at shallow angle to C/A (10-40 deg.)</p> <p>123.7 Blocky core over 30 cm.</p> <p>Mottled 121.1m mottling x cut by grey/white silica vein 5mm wide 25 deg. to C/A..</p>

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Fracturing and alt (vk)				Slight change in colour to grey/light green (wt bleaching) over 6m from 120.9 to 125.5 (Ø 124 fracture parallel to C/A).
		116.7 - possible fault or fracture. Weak breccia lighter grey/green. Decrease in feldspar content to approx. 3% after 130.0m (very gradual change)	133.0	Slight increase in sericite alt (softer & greener). Increase in fracturing at shallow angle to C/A.	133.1 Possible specks of gn or sph assoc. with py.	Feldspars noticeably altered on rim and locally green colour within this interval.
		140.1 5mm vein, 1% py, black with minor cb.qtz ser. Sharp lower contact, ser, upper more silic.	45			133.4 Slightly blocky core
		145.5 8 mm wide white qtz with cc vein,----- 1% py along vein margins.	10	141.5 - 141.70 Lighter grey, blocky (weak silic)		136.5 - 137.1 Very blocky core (fault gouge)
		147.8 White qtz vein 1cm wide ----- Weak silic/albite tr py .	05	142.2 - 143.0 Ligher grey/white silic (albite?) zone, fractures mod at variable orientations. Also crosscut by <5mm wide qtz/silica veinlets. Generally at shallow angle to C/A. Contacts are well defined and marked by qtz veins 20 deg to C/A	Up to 15% diss py along 20 deg fracture planes and semi massive py with qtz veins 1% diss. py ass with vein at 143.8m	139.1 Same wide qtz vein 45 deg. to C/A. 1% py ass, darker green mineral (chl? mica?) also ass.
		148.5 & 148.6 150.1 5mm wide qtz vein 15 deg to C/A, 3mm wide bleached selvage in host rock around vein. Tr to 1% py associated.				142.0 Minor blocky core + 1% diss py along fractures.
		160.2 (.5m of network) Weak feldspar phryic, 1% feldspar <1% qtz. eyes "banded". Weak fine micro fracturing. Sharp upper contact -----	30 30	144.5 - 145.1 Blocky core increase in fracturing, ser alt moderate.		143.8 1cm wide white/grey qtz vein 20 deg. to C/A. X cut by shallow fractures in ser rock.
		160.7 - back to QF phryic rhyolite. Transition to fine grained rhy instead of very fine grained (minor alt feldspar halo) starting approx. 159.8. Minor <3mm qtz veins weak mottling.	10 to 30	158.2 - 159 Mod. blocky core. Weak mottling at 160.7 over .8m		146.1 Mica vein 45 deg. to C/A Minor blocky core.
				159.1 Minor blk alt along fractures over 25 cm.		146.1 - 147.8 Less green, qtz eyes, and feldspar not readily visible, micro fractures or weak ser around minerals (vk net work) Gradual decrease in light green ser to 159m. Minor veins 70 deg to C/A 3mm qtz.
						157.8 1cm wide white qtz rich vein 20 deg C/A. 1% diss py, hosted in mod micro fractures with ser alt along fractures (fuzzy) at 160 micro fracturing 60 deg. to C/A.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
						153.7 & 154.6 Blocky core over 0.5m.
165.50 TO 169.80	BRECCIA (Contact Breccia?)	Green/dark grey Semi consolidated ser. rhy. fragments, minor argillite (blk but not conductive) <1cm.		Soft, very friable, clay rich, Very poor core recovery (gravel)	Locally tr to 1% py + tr cpy smeared along fracture.	Starting at 161.5m blocky core, poor core recovery to 175.0m
169.80 TO 170.55	MAFIC DYKE	Black. Very fine grained. Medium hard, fine grained. Locally vesicular (170.3) Upper contact.-----	60			MAFIC DYKE Sharp upper contact 60 deg. to C/A Looks like volc, vesicular,sharp contacts
170.55 TO 175.10	CHERTY BRECCIA	Grey. Fine grained. Small <5mm cherty angular fragments. Very hard, fractured, poor core recovery. 80-90% fragments. Matrix greenish/tan (tuff? sed?) Weak banding 2mm wide blk band ----- containing 5% diss py	60	Wk. ser.	Locally 5% py in 2mm bands.	Light green fragments (?) irregular shape <1mm, 2%.
175.10 TO 181.90	BRECCIA (Phreato magmatic -basaltic)	Brown, pale green, grey. Fine grained(locally porph.). In situ basaltic breccia. Hard, non-magnetic. Fragments are variable in size 3cm, rounded, maf-int.(basalt?) which contain 5-15% < 1mm light brown phenocrysts/amygdules. A darker selvage (alt?) as present in some fragments. The fragments are fractured and filled with silica (1mm). Fragments 90% - sometimes matrix supported. Matrix very fine grained (silica rich). Unit is crosscut by 2% 1mm wide white qtz +/- carbonate veinlets. 70-80% to C/A.			Tr py (diss) @ 180.5 - 1mm wide qtz (white) veinlet oriented 85 deg to C/A contains speck of cpy	Lower contact with chert breccia not sharp - defined over 2cm. 2cm of chert sharp oriented 60 deg. to C/A then increase in tuffaceous component (pale green/tan, fine grained)
		END OF HOLE				

Sample	From (m)	To (m)	Length (m)	GEOCHEMICAL							COMMENTS
				Cu ppm	Zn ppm	Pb ppm	Ag ppm	Au ppb	As ppm	Sb ppm	
BCD7501	32.90	33.90	1.00	47	109	41	1.7	15	22	5	
BCD7502	48.00	49.00	1.00	29	228	26	1.6	5	26	3	
BCD7509	132.10	133.10	1.00	4	22	28	0.9	5	2	2	
BCD7510	133.10	134.10	1.00	4	28	38	0.8	5	1	1	
BCD7511	134.10	135.10	1.00	4	9	16	0.9	5	1	1	
BCD7512	135.10	136.10	1.00	2	7	15	0.9	15	1	1	
BCD7513	136.10	137.10	1.00	4	22	31	0.9	5	1	1	
BCD7514	137.10	138.10	1.00	2	13	43	0.9	5	2	1	
BCD7515	138.10	139.10	1.00	3	10	19	1.0	20	3	2	
BCD7516	139.10	140.10	1.00	2	7	15	0.7	5	1	1	
BCD7517	140.10	141.10	1.00	2	6	14	0.9	5	1	1	
BCD7518	141.10	142.00	0.90	2	5	9	0.8	10	3	2	
BCD7519	142.00	143.00	1.00	5	5	9	1.4	270	1	2	
BCD7520	143.00	144.00	1.00	2	6	12	0.9	15	3	2	
BCD7521	144.00	145.00	1.00	3	7	11	1.0	5	4	1	
BCD7522	145.00	146.00	1.00	7	11	12	0.8	600	2	1	
BCD7523	147.50	148.50	1.00	5	7	9	0.9	5	5	2	
BCD7524	148.50	149.50	1.00	5	7	7	0.8	35	1	1	
BCD7526	157.20	158.20	1.00	4	17	22	1.0	10	5	2	
BCD7527	166.10	167.60	1.50	967	90	24	3.9	215	57	5	

HOLE NUMBER: CCF-12

GEOCHEM. SHEET

DATE: 16-December-1987

Sample	From (m)	To (m)	Length (m)	SiO ₂ %	Al ₂ O ₃ %	CaO %	MgO %	Na ₂ O %	K ₂ O %	FeO %	MnO %	TiO ₂ %	Sr %	Ba ppm	Cu ppm	Zn ppm	Pb ppm	Ag ppb	Au ppb	As ppm	Sb ppm	Zr %	Tot %
BCD7500	8.50	11.50	3.00	77.1	9.67	.32	1.49	.02	2.27	4.25	.02	.53	.02	.887	45	137	40	0.9	5	12	4	.008	96.73
BCD7503	65.00	68.00	3.00	49.88	16.75	9.31	6.38	3.47	.12	9.87	.25	1.13	.02	.028	86	74	19	1.8	5	15	7	.005	97.18
BCD7505	84.43	87.43	3.00	49.21	16.72	10.02	7.14	2.63	.72	8.94	.23	.97	.02	.038	78	61	26	1.8	5	23	5	.005	96.65
BCD7504	90.00	93.00	3.00	46.73	15.83	8.00	5.43	3.33	.69	10.03	.23	1.23	.01	.039	80	82	17	2.2	10	30	1	.005	91.56
BCD7506	101.19	104.19	3.00	72.85	13.67	.36	.17	2.35	6.78	1.20	.02	.23	.01	.099	5	25	18	0.6	10	8	1	.015	97.76
BCD7507	112.21	115.21	3.00	72.63	13.88	.30	.21	1.98	7.15	1.14	.01	.24	.01	.096	4	29	23	0.6	5	3	1	.012	97.66
BCD7508	122.50	125.50	3.00	73.76	13.10	.50	.18	2.16	6.61	1.08	.02	.22	.01	.092	3	16	21	0.5	5	5	2	.015	97.75
BCD7525	151.48	154.48	3.00	76.02	12.85	.35	.15	4.00	2.94	1.02	.02	.21	.01	.074	3	9	13	0.5	5	2	1	.014	97.65
BCD7528	170.50	173.50	3.00	76.96	7.71	2.61	2.08	.29	1.73	4.89	.36	.56	.01	.236	173	51	34	1.1	5	30	12	.005	97.44
BCD7529	178.90	181.90	3.00	48.36	15.59	7.95	6.94	2.06	2.5	11.19	.30	1.66	.03	.21	116	81	25	1.2	5	20	7	.008	96.80

HOLE NUMBER: CCF-12

GEOCHEM. SHEET

PAGE: 8

HOLE NUMBER: CCF-13

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: **METRIC UNITS: X**

PROJECT NAME: CHUCHUA
PROJECT NUMBER: 321
CLAIM NUMBER: CC2
LOCATION:

PLOTTING COORDS GRID: MAIN
NORTH: 9559.00M
EAST: 11110.00E
ELEV: 1872.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 0,00

COLLAR DIP: -67° 0' 0"
TH OF THE HOLE: 148.44m
START DEPTH: 0.00m
FINAL DEPTH: 148.44m

COLLAR GRID AZIMUTH: 270° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 270° 0' 0"

DATE STARTED: September 18, 1981
DATE COMPLETED: September 21, 1981
DATE LOGGED: 0.

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
REQ LOG: NO

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NO

CONTRACTOR: FRONTIER DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSES

DIRECTIONAL DATA:

HOLE NUMBER: CCF-13

DRILL HOLE RECORD

LOGGED BY: K. SUTHERLAND

PAGE: 1

HOLE NUMBER: CCF-13

INNOVA INC.
DRILL HOLE RECORD

DATE: 16-December-1987

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 1.53	CASING					
1.53 TO 108.80	BASALT (Pillowed)	<p>Green. Fine grained. Massive and pillowed, locally darker coloured and mottled (varioles?) grad contacts.</p> <p>6.60 10cm wide zone of increased carbonate qtz veining, irregular oriented -----</p> <p>7.6 Sharp contact uphole between dark green to light green. Dark green/black is harder than lighter green. Approx. 10.6m Grad change to darker and mottled.</p> <p>20.0 Light green hosting 8mm qtz/carbonate vein ----- displaced by healed fault ----- over 10 cm.</p> <p>28.3 8mm siliceous vein</p> <p>28.7 2cm wide Q/C vein</p> <p>30.1 Well defined change to darker rock. 1.5m wide interval locally variolitic, small pillows observed (in part weak hyaloclastite?)</p> <p>37.6 Pillow rim with up to 5mm black (hard) rounded varioles (?) also at 35.6 & 32.9m</p> <p>41.7 Slightly coarser grained over 1.5m</p> <p>45.2 10cm wide tan/breccia hyaloclastite</p>	<p>35</p> <p>20</p> <p>20 55</p> <p>25</p> <p>20</p> <p>37.0</p>	<p>tr py, po (very local)</p> <p>1 cm wide white qtz cb vein, 1% py/py</p>	<p>11.20 Qtz cb. 8mm wide 65 deg. to C/A with cp selvages (pillow rim?)</p> <p>12.9, 14.4, 13.5, 13.6 20 deg. to C/A, 1cm 'vein' with defined but not sharp contact. 1mm blk xtl - med.hard (PX?)</p>	
					<p>44.3 1cm wide Q-C vein 20 deg to C/A with 5mm pale green bleached selvage.</p> <p>47.1 Pillow selvagee (?) 50 deg. to C/A</p>	

HOLE NUMBER: CCF-13

DRILL HOLE RECORD

LOGGED BY: K. SUTHERLAND

PAGE: 2

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		47.36 Small pillows				Minor bleached veins which alter varioles from black to medium green as at 55.5
		51.0 Hyaloclastite over 2 cm.				
		62.5 3.5mm wide qtz carbonate veins with up to 1cm light green bleached halo. Host basalt has increased 1mm feldspars (poss amygs?)		56.25 Sharp contact 70 deg. C/A of light green (up hole)/black basalt. Lower contact grad.		56.0 1cm varioles, coalescing
		70.5 .70m of gouge (fault?) med. soft. Rock slightly soft uphole from gouge.				61.6 1cm qtz/cb vein with green bleached selvages 70 deg to C/A
		80.75 White 8mm wide Q-C vein in bleached zone 1cm wide 65 deg C/A offset by fine healed (45 deg other way) faults (stepped) then 5mm wide qtz-cb vein 65 deg C/A.				63.8 & 65.5 Hyaloclastite Hyaloclastite pale green alt, micro breccia .
		94.3 40 cm long white qtz + cb vein. 1% diss py. Blocky core at bottom contact (fault?)				70.0 8mm wide Q-C vein 10 deg. to C/A
		97.0 - 99.6 Grey, gren (med. fractures 20 deg. to C/A minor carbonate veinlets) very black core, poor core recovery locally weak breccia, med. hard.		Tr py		79.1 Q-c vein 1cm wide 15 deg. to C/A tr py. Blocky core
		95.9 Slight increase in carbonate qtz-carbonate veining at various angular weak breccia as a result of the veining.				93.9, 94.2 & 94.6
		102.7 Pillow rim				95.4 (breccia) softer than host rock.
		105.4 - 106.4 Breccia slightly blocky, increase in qtz-cb veining at variable orientations.		cb calcite	No apparent sulf min.	85-95 Slightly darker mottled, variolitic, local hyalo and cb/qtz, filled fractures with marrow bleached halo.
		107.25 3cm. wide qtz+cb vein. Weak mottling in breccia in host rock.				100.6 2cm wide 'vein' 30 deg. to C/A of black, needles (px? hbd? hard)
						105.2 - 105.4 Blocky core
						105.5 Bleached fragments <1cm 40 deg to C/A 4cm wide (fault he?) with breccia basin on uphole and downhole.

HOLE NUMBER: CCF-13

MINNOVA INC.
DRILL HOLE RECORD

DATE: 16-December-1987

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
						106.4 - 106.9 Blocky core
						108.0 - 109.4 Blocky core
108.80 TO 112.90	CHERTY SED	<p>Grey/black. Fine grained. 108.8 - 109.7</p> <p>Grey/black, fine grained, blocky.</p> <p>109.7 - 110.8 Grey cherty local slumping + breccia, minor buff, fine ash.</p> <p>Bedding at 111.8 - 112.9 Grey, fine grained. Grey cherty with 10% fine ash tuff interbedd and matrix for chert breccia frags .</p> <p>Bedding</p>	Hard (blk chert) 60 60 to 70	<p>Locally 5% diss py (non magnetic, no po) and along 'frag' margins.</p> <p>5-8% diss py</p> <p>Blebs py to 5mm and diss minor cubic 1-2% diss py (decrease in py down hole)</p>	<p>Upper contact grad over 10cm. Lower contact relatively well defined.</p> <p>Up tp 20% .5mm varioles? downhole in blacker unit.</p> <p>(radiolaria?)</p>	
112.90 TO 148.44	BASALT	<p>Green. Fine and medium grained. Slight increase in carbonate.</p> <p>114.6 - 124.6 5-10% < .5mm feldspar? Porphyritic? 2-5% chl phenos</p> <p>124.6 Localized zones of breccia with or without bleaching. Frags basalt <1cm - generally frag supported.</p> <p>126.5 - 127.2 Coarser grained 25% white pheno (grad upper contact, sharper lower contact)</p> <p>Not variolitic. Subtle breccia zones - localized zones of insitu basalt frags (90% <1cm, sub-angular) in matrix of chl/ser (paler green), variable widths, no defined contacts</p>	<p>Weak carb. alt.</p> <p>Massive, slightly softer (wk chl) wk. cb.</p> <p>V. weak to no cb alt harder.</p>	<p>1-2% py.</p>	<p>Net textured to 114.1 (wk alt. ser) network.</p> <p>114.1 - 114.6 Wk pale green banding <2mm 75 deg. to C/A. 114.4 Pale green pillow rim? Slight increase in carbonate.</p> <p>Increase in <.5mm cb veinlets at variable orientation.</p> <p>124.6 - 125.6 Breccia 3cm pale green matrix</p> <p>136.5 & 146.9 Better defined insitu breccia zones</p>	

HOLE NUMBER: CCF-13

DRILL HOLE RECORD

LOGGED BY: K. SUTHERLAND

PAGE: 4

HOLE NUMBER: CCF-13

MINNOVA INC.
DRILL HOLE RECORD

DATE: 16-December-1987

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		(flow breccia?) Note: This flow does not appear pillowd or variolitic and is markedly different than Basaltic unit uphole cherty sed (interflow)			Tr. py along fractures.	Approx..25m wide matrix supported.
		145.9 - 146.6 Breccia, blocky core (fault breccia?) Minor maf. volc frags, broken qtz & cb vein - no vis sulph med soft - frags alt to chl.				137.1 - 138.1 Blocky core breccia, lighter grey, green.
		146.6 - 146.8 Cherty zone (qtz vein?) with minor interbedded tuff. Sharp but irregular contact.				140.8 1cm wide, bleached contact with minor chl and minor qtz vein parallel to contact - oriented 45 deg to C/A.
		END OF HOLE				144.1 6cm wide qtz+cb vein. 20 deg to C/A. Irregular minor chl - no vis sulph.
						144.7 4cm wide qtz+cb+chl vein 10 deg to C/A. No vis sulph.

HOLE NUMBER: CCF-13

DRILL HOLE RECORD

LOGGED BY: K. SUTHERLAND

PAGE: 5

HOLE NUMBER: CCF-13

ASSAY SHEET

DATE: 16-December-1987

Sample	From (m)	To (m)	Length (m)	GEOCHEMICAL						COMMENTS
				Cu ppm	Zn ppm	Pb ppm	Ag ppm	Au ppb	As ppm	
BCD7537	108.20	108.80	0.60	59	97	12	1.2	10	1	1
BCD7538	108.80	109.80	1.00	60	118	22	0.7	50	20	1
BCD7539	109.80	110.80	1.00	67	59	18	0.6	30	29	1
BCD7540	110.80	111.80	1.00	55	52	14	0.4	40	50	1
BCD7541	111.80	112.80	1.00	37	72	19	0.7	20	10	3
BCD7542	112.80	113.80	1.00	14	75	16	1.6	50	32	4
BCD7543	129.20	132.20	3.00	6	34	68	1.6	5	1	7
BCD7544	145.83	146.83	1.00	6	46	18	1.7	10	20	2

HOLE NUMBER: CCF-13

ASSAY SHEET

PAGE: 6

HOLE NUMBER: CCF-13

GEOCHEM. SHEET

DATE: 16-December-1987

Sample	From (m)	To (m)	Length (m)	GEOCHEM. SHEET																			
				SiO ₂ %	Al ₂ O ₃ %	CaO %	MgO %	Na ₂ O %	K ₂ O %	FeO %	MnO %	TiO ₂ %	Sr %	Ba %	Cu ppm	Zn ppm	Pb ppm	Ag ppb	Au ppb	As ppm	Sb ppm	Zr %	Tot %
BCD7530	14.32	17.32	3.00	44.96	14.5	8.39	6.54	3.55	.12	10.57	.25	1.66	.02	.005	104	66	20	2.9	5	33	3	.009	90.56
BCD7531	38.20	41.10	2.90	46.48	14.4	7.73	7.01	3.38	.09	10.62	.25	1.64	.02	.005	37	71	12	2.7	5	29	3	.009	91.63
BCD7532	57.90	60.90	3.00	47.67	14.62	7.28	6.54	3.55	.12	10.34	.25	1.64	.02	.005	65	69	15	2.3	5	20	1	.010	97.73
BCD7533	81.40	84.40	3.00	44.77	14.24	12.09	5.31	1.56	.12	9.65	.27	1.50	.01	.010	42	47	17	2.4	5	24	1	.008	89.54
BCD7535	102.40	105.30	2.90	46.72	14.74	8.3	6.12	3.0	.37	10.31	.25	1.63	.02	.053	54	93	22	2.3	5	1	2	.011	91.53
BCD7536	114.70	117.70	3.00	43.67	12.89	9.61	7.31	2.77	.18	10.37	.28	1.48	.01	.018	7	77	20	1.8	5	30	1	.006	88.59
BCD7545	146.83	148.43	1.60	47.32	15.92	7.29	4.06	4.34	.15	10.38	.31	1.82	.02	.013	7	45	14	2.1	5	19	4	.014	91.64

HOLE NUMBER: CCF-13

GEOCHEM. SHEET

PAGE: 7

HOLE NUMBER: CCF-14

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: **METRIC UNITS: X**

PROJECT NAME: CHUCHUA
PROJECT NUMBER: 321
CLAIM NUMBER: CC7
LOCATION:

PLOTTING COORDS GRID: MAIN
NORTH: 9500.00N
EAST: 11260.00E
ELEV: 1859.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 0.00

COLLAR DIP: -68° 0' 0"
LENGTH OF THE HOLE: 121.00m
START DEPTH: 0.00m
FINAL DEPTH: 121.00m

DATE STARTED: September 21, 1987
DATE COMPLETED: September 23, 1987
DATE LOGGED: 0. 0

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RQD LOG: NO

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NO

CONTRACTOR: FRONTIER DRILLING
CASING: LEFT IN HOLE.
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

HOLE NUMBER: CCF-14

DRILL HOLE RECORD

LOGGED BY: K. SUTHERLAND

PAGE: 1

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.08	casing					
3.08 TO 31.70	GF ARGILLITE INTERBEDDED W/ CHERT	Grey, grey/black. Fine grained. Hard, non-magnetic. Beds 1mm to 3cm wide, sharp contact between black and grey to dark grey beds. Locally soft sed def weak description (rib up 17.1m) Increase of content down hole. Contains <.5mm round buff coloured phenos 5% <1mm silica white veinlets @ variable orientations Bedding -----	30 45 to 50		1% diss py & xcutting veinlets as @ 112.60 (irregular and disrupted) And .5mm en echelon veinlets (along bedding + disrupted) 2% 3 py as 1mm py veinlets irregular and disrupted, minor diss and along fracture planes. 22.0 5mm wide bed of py 45 deg to C/A	Weakly conductive in blk bands approx 12.50m Overall poor to mod core recovery, very blocky. Rusty at top of hole (water perc) 12.0 - 14.0 Good core cc 14.0 - 22.5 Weak conductor. Increase to gf arg. Very poor core recovery.
31.70 TO 79.30	CHERT TUFF BRECCIA INTERBEDDED	Grey/green. Fine grained. Interbedded gry, chert and fine, ash tuff, grey/green. Chert - very hard, Tuff med.hard. Bedding at Chert locally mod. fract. Tuff - ash, wk to mod 1mm darker and light 'beds' w/ green. 1% qtz eyest feldspar <1mm. Contains strongly disrupted sulphide + qtz 'bed' - looks like worm. Fractures in chert approx. ----- Fine faults (healed) offset bedding on small scale. Darker green on contact between beds. (at least) 2 stage of def - 1 phase with chert frags, 2 phase with both tuff and chert (faulting, breccia and soft sed slumping) Brittle def chert, ductile def tuff) Chert frags, fractured with black in fracture filling, tr py variable size, generally > 3cm. Increased tuffaceous component from 1cm to 5cm wide. Chert and cherty tuff interbedded. Bedding at 40-50 deg. Bedding stays fairly consistent downhole. Finer, more as tuff at bottom of section.	45 40 90		1-3% py diss, localized blebs, some cubic. General comment - sulphides minor 1 phase and in late fractures. 43.00 blebs of py in tuff bed parallel to bedding 40 deg. to C/A 1% cubic py to 7mm as at 70.00	Upper contact grad over 20cm (sharp but intermixed) 40 deg. to C/A and disrupted beds. 35.05 - 36.27 Poor core rec. Starting approx. 39.62 More regular bedding between chert and tuff. 1-4cm wide beds. More prominent green colour. Minor late <1mm qtz veinlets at high angle to C/A which xcut chert and tuff. Approx. 43.0 - 46.5 Intermittent breccia - rounded chert w/ frags (tuff matrix supported) 80% frags. Up to 4cm frags of chert. General Comment - more py in chert than tuff. Poor core recovery 59.95 - 62.7 Blocky

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
						Tuff slightly coarser grained and darker green at 68.8 Tops may be down hole? (68.8m) Lower contact breccia chert in tuff matrix.
79.30 TO 86.95	DEBRIS FLOW	<p>Black. Fine matrix fragments to 10cm. Matrix - black, fine grained 30%, matrix supported (but locally fragment supp). Fragments - sub-angular to sub-round, not sorted 70-80%. Chert-50%, Gf Arg - 40%, felsic tuff 10%. General preferred orientation of fragments with long axis 60 deg C.A. (Wk.pref orient) Fragments <10cm but generally <1cm.</p> <p>Fines down hole to dominantly argillite, some frags fractured/pre debris flow.</p> <p>83.51 20cm section of larger chert frags.</p>	60	<p>Weak bedding 60 deg. to C.A. at 83.20 Preferred orientation</p> <p>Ripped up, wk aerodynamic, angular.</p>	<p>1% cubic py and 1% minor sulph blebs <2mm locally 2-3% as at 80.85, possibly wk along bedding plane as 83.20 (in matrix and in frags, sometimes rimming)</p> <p>More sulph assoc. with gf. frags (general tendency)</p>	<p>Upper contact well defined, breccia tuff/chert then gf debris flow.</p> <p>Breccia (angular frags over 10cm @ 80.70). Minor soft sed def and flow textures. Locally gf frags, py blebs weakly conductive at 80.77 No apparent grading. Unit fires down hole, less frags generally to dominantly argillite. Lower contact well defined. Breccia in debris flow <8mm frags.</p>
86.95 TO 89.20	BASALT (PX PURPH)	<p>Grey/brown/green. Fine ground mass (por phritic) Massive, fine grained matrix with <2mm phenocrysts (alkali hbl)</p> <p>(30-35% no real preferred orient)</p> <p>Medium soft, non-magnetic. Upper and lower contact wky breccia Phenocrysts rounded subhedral darker green (px or px-chl) 10-15%</p> <p>(2) Paler green, elongate needles (alkali hbl - chl) 15-20%</p> <p>(3) Grey/white anhedral (plag) 5%</p>		Mod-str reaction with HCl (localized 87.17 strong)	No visible sulph	<p>Weak bx in upper contact (in situ) irregular but defined. Contains minor carbonate veinlets at variable orientations. Blocky core. Lower contact brecciated in slightly more siliceous (harder) matrix.</p>
89.20 TO 89.65	CHERTY BRECCIA	<p>Grey/green. Variable grained. Sub-rounded to sub-angular fragments, dominantly chert, <1cm in 30% tuffaceous? matrix. Wk pref. orient</p>	50		Tr py.	Upper contact round fragments of upper in sil matrix grades to chert breccia. Lower contact breccia volcanics (broken up but soft) not sub-angular.

HOLE NUMBER: CCF-14

MINNOVA INC.
DRILL HOLE RECORD

DATE: 17-December-1987

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
89.65 TO 117.96	BASALT	Grey/brown. Fine grained. Massive, medium hard to medium soft, fine grained equigranular, non-magnetic minor <1mm leucoxene?		Carbonate wk. Possible biot to give brown colour? 96.1 Approx. 1m long inclusion of white carb (alt feldspar) to 15% <1m (slightly coarser grained than other sections)	Tr-1% py (diss)	94.3 2cm wide 45 deg.C.A. qtz/cb, chl (vein) then finer grained wk breccia. 95.25 Approx. 30-50cm zone of breccia. 98.75 - 99.97 Blocky core 101.3 Coarser grained. (blotchy)
		117.5 Qtz vein, very blocky.				105.46 - 117.96 Blocky core 1m lost 108.81 - 111.56 111.7 Breccia/cherty frags in mafic matrix.
117.96 TO 119.00	MAFIC DYKE ?	Black. Fine grained. Massive, medium soft, non-magnetic. Locally vesicular to 8mm most <1mm, locally filled with very soft powdery black mineral		No reaction to HCl	No visible sulph.	Sharp upper and lower contact but core very blocky, so no core angles.
119.00 TO 121.00	CHERT BRECCIA	Grey. Variable. Fragments - 90-100% chert (grey) fine grained, generally sub-rounded and <1cm. Generally hard with minor softer mafic frags. 10% softer, greenish mafic fragments, irregular frag supported. END OF HOLE			Tr - 1% py.	

HOLE NUMBER: CCF-14

DRILL HOLE RECORD

LOGGED BY: K. SUTHERLAND

PAGE: 4

HOLE NUMBER: CCF-14

ASSAY SHEET

DATE: 17-December-1987

Sample	From (m)	To (m)	Length (m)	GEOCHEMICAL								COMMENTS
				Cu ppm	Zn ppm	Pb ppm	Ag ppm	Au ppb	As ppm	Sb ppm	Au g/T	
BCD7546	12.00	14.00	2.00	63	123	15	1.4	30	7	3		
BCD7547	22.86	23.86	1.00	76	123	10	0.6	10	1	1		
BCD7548	32.61	33.61	1.00	40	71	18	0.2	5	4	2		
BCD7549	39.70	40.70	1.00	62	110	27	0.4	160	12	2		
BCD7550	40.70	41.70	1.00	44	107	26	0.6	5	4	1		
BCD7551	49.90	50.90	1.00	32	87	22	0.6	5	1	1		
BCD7554	79.23	80.23	1.00	36	93	26	0.5	5	16	2		
BCD7556	84.40	85.90	2.50	39	102	22	0.6	10	7	2		
BCD7557	86.17	89.17	3.00	68	80	18	1.2	5	12	3		
BCD7558	89.17	89.70	0.53	178	147	26	0.9	10	4	2		
BCD7559	90.30	93.30	3.00	38	83	18	0.9	5	21	3		
BCD7560	101.50	104.50	3.00	39	86	17	1.1	5	23	5		
BCD7561	117.96	119.00	1.04	32	128	16	3.4	10	5	1		
BCD7562	119.00	121.00	2.00	311	50	21	1.0	5	23	7		

HOLE NUMBER: CCF-14

GEOCHEM. SHEET

DATE: 17-December-1987

Sample	From (m)	To (m)	Length (m)	SiO ₂	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	FeO	MnO	TiO ₂	Sr	Ba	Cu	Zn	Pb	Ag	Au	As	Sb	Zr	Tot
				%	%	%	g	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	%	%
BCD7552	62.79	65.79	3.00	75.63	9.21	2.53	3.27	.02	2.05	3.71	.08	0.51	.02	3.83	60	82	21	0.6	10	5	2	.013	97.42
BCD7553	71.20	74.20	3.00	80.32	7.65	1.57	1.72	.02	1.98	3.38	.08	.42	.01	.322	52	62	19	0.5	5	5	2	.009	97.48
BCD7555	74.30	76.30	2.00	76.98	8.69	2.6	1.84	.03	2.42	3.7	.08	.58	.01	.347	58	49	16	0.7	5	5	2	.023	97.31

HOLE NUMBER: CCF-15

MINNOVA INC.
DRILL HOLE RECORD

DATE: 17-December-1987

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 8.40	CASING					
8.40 TO 17.98	BASALT	<p>Colour - green/grey Grain size - fine Massive, non-magnetic, medium hard. Varying fine and coarser grained intervals with gradational contacts. Finer grained intervals dominant but are locally brecciated - in situ-frag supported and basaltic comp. Grad contacts, variable widths from 2cm to 25cm. Frags generally <8mm (as @ 17.68, 15.7-16.46)</p> <p>Bands 17.5-17.68 -----</p> <p>Interbedded felsic tuff (16.75-17.98) and mafics with minor py.</p>	90	<p>No reaction with HCl</p> <p>Interbedded felsic qtz eye tuff + mafics.</p> <p>16.9</p> <p>Defined contacts (but not sharp)</p>	<p>Tr py (mainly along fracture planes)</p> <p>17 po as blebs <1mm, tr cpy. Cpy in darker mafic band in lighter felsics containing po at breccia/tuff contact.</p> <p>16.3</p>	<p>Localized zones which are coarser grained as from 10-11m, grad. contacts 14.7-15.65m. Blocky core first 2m.</p> <p>Minor narrow (10-25m) of breccia at 14.03m. Irregular qtz + carb veins oriented generally 40 to c/a over .25m.</p> <p>Lost core between 16.46-17.98</p>
17.98 TO 20.30	Interbedded CHERT and INTERMED. TUFF	<p>Colour - grey/green Grain size - fine Cherty, hard, highly fractured with rust along fractures or bleaching/alt. to 2mm. Fractures variable orientations but dominantly at higher angle to c/a.</p>	80		1-2% py (cubes up to 5mm) and locally along bedding plane (19.7)	<p>Blocky core 17.98-18.90. Blocky core at contact, no orient. (defined) Rusty staining along fractures 17.98-20.51</p>
20.30 TO 33.60	INT. to FELSIC TUFF interbedded with CHERT and locally BRECCIATED	<p>Colour - grey Grain size - fine Bedding 80-90 to c/a, beds are 1mm to 2mm wide. Defined but not sharp contacts between beds. Medium hard. Disrupted beds increase downhole of breccia frags after fault at 23.8m. Chert frags/beds variable size from 1cm frags to 3cm wide beds.</p> <p>Tuff (ash) fine grained, grey/green (wk ser), mod. soft.</p> <p>Chert - v. fine grained, hard, grey white, locally minor fractures.</p>	80	<p>No reaction with HCl</p>	<p>17 py (usually euhedral to 3mm) (in chert + tuff) late.</p> <p>Chert (and less in tuff) contain <1mm of beige mineral? dk rim.</p>	<p>Upper contact grad. and marked by colour change and decrease in fracturing and rusty along fractures.</p> <p>20.3-22.1 Minor pink hematitic bands with darker green. Core occurs in 2-5cm pieces.</p> <p>23.8-24.0 Weak bx, friable, fault gouge?</p> <p>At 20.5m evidence of graded bedding for tops down hole.</p> <p>Chert frags may have been semi</p>

HOLE NUMBER: CCF-15

DRILL HOLE RECORD

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PAGE: 2

HOLE NUMBER: CCF-15

MINNOVA INC.
DRILL HOLE RECORD

DATE: 17-December-1987

FROM TD	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Breccia - dominant 23.8-25.9m From 29.6m - blocky core but dominantly tuff/cherty tuff with marked decrease in chert beds/frags. Very fine fractures increase downhole.				consolidated when formed. Blocky core 29.56-32.6m 32.6 Fault gouge 20 to c/a
33.60 TO 106.50	DIORITE	Colour - green Grain size - med. to coarse Massive, medium soft, non-magnetic. 35.6 Start of coarse grained, green diorite, non mag., mafic dominant. Mafic mineral (px) to 4mm, 30% Plag/carb <1mm 30% Chlorite 40% Sub-anhedral crystals with increase in plag/carb grain size down hole with decrease in mafic mineral (px, hbd - chl) weak foliation	90	Weak to mod. reaction with HCl (plag to carb - throughout c,m,f grained)	Tr diss py	Upper contact green grey, gradational over 3m and marked by increase in grain size, buff colouration to rock with no reaction with HCl, minor carb/qtz veinlets (80 to c/a). Beige has more sharp contact 70 to c/a, softer, medium grained and 3% green mineral (fuchsite?), soft <2mm. Contact with dark green coarse diorite grad. (colour, texture, hardness, decrease in carb veinlets).
		40.9 Start of med. gr. Contact grad. 25cm, 5% carb veinlets.				Minor fractures at variable orientations.
		49.1 Start of fine grained. Contact grad. 10cm minor.		53.8 Gradual increase in light green colour (epidote alteration?)		
		55.3 Increase in grain size to med. grained (also correspond to epidote alt.) 50% hbd - sub-anhedral, 30% epidote, 20% plag/carb		59.1 epidote vein at 20 to c/a, 5mm wide.		
		69.0 General hard to fine to med. grained diorite becoming harder and decrease in carb alteration (over 50cm 70.7-71.2)		62.41-68.5 Contains 15-20% <2mm pale pink/off white med. hard but can get powder, irregular shape localized over 10cm. Well defined but not sharp.	62.41-68.5 tr-1% diss py 67.0 20cm; 1-2% py	62.61 Vein - 5cm wide, white qtz + carb vein, 10 to c/a, tr py - c. grained open space filling.
		79.45-84.45 Fault zone - generally extremely friable, clay rich/muddy and brecciated, talc-rich. Contain more competent zones within fault. Very, very weak andesite over short distances.		79.45-84.45 Talc rich with chl		64.88 white qtz with carb vein; 6cm wide, 20 to c/a.
		79.85-80.8 Contains 10% py. Magnetic (probably due to				69.1 Ground core over 0.5m 72.6

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		magnetic and tr po) 83.2-83.8 10% carb veining.				Blocky core over 30cm.
		84-84.45 Carb veining 30%; non-mag, carb altered.				
		Individual contacts within zone vary to ----- Fault -----	30 75			
		85.4-88.0 Slight increase in felsic component - blotchy.				
		89.5-92.8 Fine grained more mafic (slightly darker) weakly to mod. magnetic due to mgt, tr py. Last 20cm soft, blocky.			89.5-92.8 1% mgt (diss) wk-mod mgt - fairly consistent over interval.	
		92.8-94.6 Fault (not as strong as previous). Breccia (diorite frags to lcm in clay matrix). Lower contact 45 c/a soft, locally friable. Consolidated rock within zone, contacts 20 c/a.	45			
		97.0 11cm wide qtz carb vein, barren -----	15	carb alt. is intermittent from 97.2-101 slightly harder and none to very weak carb. alteration.		
		102.81 10cm wide white qtz carb vein -----	45			103.5 Minor blocky core, loss of 15cm
		104.0-105.5 1% py, increase in hardness, presence of 20% pale pink/off white <2mm phenocrysts (leucoxene) anhedral, poikiloblastic.			104.15 Increase to 1-2% diss py, over lm. 3-4% py at contact zone.	104.1 Increase in pale pink/off white mineral anhedral, poikiloblastic, hard (leucoxene), hard, no carb alteration.
		contact at 105.9m	80			105.5-106.5 Lower contact zone.
						105.5-105.9 Locally 15% emerald green xtls? (mica?) localized along qtz with minor carb vein parallel to c/a.
						At 105.9, sharp contact to grey/ bleached rock, slightly mottled, increase to 3-4% diss py, speck of cpy.

HOLE NUMBER: CCF-15

MINNOVA INC.
DRILL HOLE RECORD

DATE: 17-December-1987

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
						at 106.48 in 2mm qtz vein/fracture 15 to c/a. Lower contact at 80 to c/a
106.50 TO 122.56	TUFF (ASH, FELSIC) interbedded with CHERT	Colour - grey/beige Grain size - fine Hard, non-magnetic interbedded tuff + chert. Bedding well defined 80-90 to c/a. Beds variable thickness 2mm to 30cm. Sharp contact between beds. Contact Bedding Locally brecciated chert frags. Minor fracturing localized in chert. Contact defined but irregular, bx chert (large frags)	80 85	Tuff + chert contain up to 20% <1mm of beige mineral (hard)	tr-2% py diss + along fractures and bedding planes. 1-2% cubic py.	111.8 70cm of tuff, fine, 20% <0.5mm beige phenos (radiolaria?). 113.9 Increase in size of phenos, described above. 118.75-120.5 Dark grey/black bands 5mm to 2cm wide.
122.56 TO 125.50	DIORITE	Colour - green Grain size - fine (f-med) Massive, medium hard, non magnetic END OF HOLE		Wk-mod. reaction with HCl	1% py (diss)	124.7-125.0 Blocky core, cherty, bx, locally bleached, locally semi-massive py along fracture 0.5mm wide.

HOLE NUMBER: CCF-15

DRILL HOLE RECORD

LOGGED BY: K. SUTHERLAND

PAGE: 5

HOLE NUMBER: CCF-16

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: **METRIC UNITS: X**

METRIC UNITS: X

PROJECT NAME: CHUCHUA
PROJECT NUMBER: 321
CLAIM NUMBER: CH 11
LOCATION:

PLOTTING COORDS GRID: SC2
NORTH: 12270.00N
EAST: 9920.00E
ELEV: 1735.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 0.00

COLLAR DIP: -55° 0' 0"
LENGTH OF THE HOLE: 135.33m
START DEPTH: 0.00m
FINAL DEPTH: 135.33m

COLLAR GRID AZIMUTH: 270° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 270° 0' 0"

DATE STARTED: September 28, 1981
DATE COMPLETED: September 30, 1981
DATE LOGGED: 0.

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
REQ LOG: NO

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NO

CONTRACTOR: FRONTIER DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSES

DIRECTIONAL DATA:

HOLE NUMBER: CCF-16

DRILL HOLE RECORD

LOGGED BY: M.J. GRAY

PAGE: 1

HOLE NUMBER: CCF-16

MINNOVA INC.
DRILL HOLE RECORD

DATE: 17-December-1987

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 1.22	CASING					
1.22 TO 15.00	RHYODAC FOP CX- LITHIC T.	<p>Light grey/light green Fine - medium grained W. foliated, massive rel homogenous looking, thickly bedded rhyodac FOP CX-Lithic T. Qtz eyes 15% <1 - <2mm FP phenos 25%, <1 - <3mm euhedral to anhedral, white fragments <1-<5%, 2-5mm</p> <p>12.55 - 12.61 Fine grained tuff, banded with minor semi-massive 3mm thick bands of py (F-CG)</p> <p>Fol'n Layering</p>	40 45 45 & 80	W-M Ser'z in mx ie) 1.22 - 4.60 W 4.60 - 10.00 W-M 10.00 - 11.50 W 11.50 - 15.00 M/M-S - Loc qtz vein @ 12.4m, C.A. 30 deg.	Tr-5% FG-MG py as disseminated blebs and euhehedral Cx. Note diss py oriented along fol'n planes with pressure shadows(?)	Limonitic +/- jarosite fracture coating 1.22 - 8.00m, relatively blocky. General fining trend within unit downhole. Non-magnetic, non-calcerous 12.63 10cm thick band with grained <8mm lithic fragments + quartz/felsic frags (99%). Irregular but defined contact.
15.00 TO 99.23	RHYOLITE QFP INTRUSIVE	<p>Light-medium, grey-green. APH-GM Fine to medium CX. Massive rhy QFP. Intrusive qtz eyes 10-15%, <1-2mm ave 1mm. FP phenos 10-15%, <1-3mm ave 1-2mm.</p> <p>Note Xenolith of tuffaceous argillite @ 96.10 - 97.00m</p> <p>Bot.CTC</p>	45	Local whitish env on fractures with proximal sel chl alt'n of FP phenos (or ser) with bleached rims. Local black patchy-perv alt'n. Local VW qtz veins Local perv wh bleached albite(?)	TR-3% MG euhedral py 15.00 - 19.00 Vw qtz veins 1-2cm,C/A 85 deg.	Upper contact 80 cm. of in situ Bx'n sub-angular fragments (90%) <2cm with sericite Mx minor blocky core.
				19.00 - 26.50 W-M frac with sel 20-80% of FP phenos to Chl/Ser, loc bleached rims coalesce. 26.50 - 31.00 W Ser on frac, W 1mm qtz veins 31.00 - 33.75 Med. grey "black alt'n" as a perv dusting(?)	15.00 - 42.00 Tr Py 42.00 - 43.50 1-2% diss py.	
				33.75 - 43.00 M frac with bleached env. with 10-50% sel ser/chl of FP.		
				43.00 - 51.00		

HOLE NUMBER: CCF-16

DRILL HOLE RECORD

LOGGED BY: M.J. GRAY

PAGE: 2

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
				<p>Stwk - patchy black alt'n 30%</p> <p>51.00 - 54.75 Perv lt green-whitish bleached/ silicified - Albite(?)</p> <p>54.75 - 64.80 Patchy loc silic-albite (20%), a fracture with sel ser of fp, a loc s <1-2mm light grey qtz., v-m 4-10mm milky wh qtz C/A 50 deg.</p> <p>64.80 - 66.00 Stwrt-patchy 10%</p> <p>66.00 - 80.47 Vv-v loc a milky white 4-20mm C/A 50 deg, a loc s 1-3mm lt. grey C/A 0-80 deg qtz, chl on frac (v)</p> <p>(66.00 - 72.00) Loc bleached silicified (alb) proximal to M-s lt. grey qtz over 10-30cm sections</p> <p>80.47 - 86.50 Vv milky wh. qtz veins, w perv ser(?)</p> <p>86.50 - 96.00 W 3-30mm wh qtz C/A 80 - 30 deg., local wh sil'f-bleached sections</p> <p>(87.25 - 87.40 90.18 - 90.40) Perv v ser(?)</p> <p>96.00 - 97.00 Tuffaceous argillite, Tr-Vv ser.</p> <p>97.00 - 99.23 W-M perv ser (?)</p>	<p>43.50 - 49.60 Tr - <1% py.</p> <p>49.60 - 55.25 1-3% py</p> <p>55.25 - 64.80 1-<2% py</p> <p>64.80 - 66.00 Tr. py</p> <p>66.00 - 80.47 1-3% py</p> <p>80.47 - 86.50 1-3% py</p> <p>86.50 - 88.00 3-5% F-MG Py 88.00 - 89.50 1-2% py</p> <p>89.50 - 95.00 3-5% Py diss 95.00 - 96.00 5% py F- cg py.</p> <p>96.00 - 97.00 F-Cg 5-8%</p> <p>97.00 - 99.23 1-3% py.</p>	
99.23 TO 135.33	ARGILLITE & INTERLAM TUFACEOUS ARGILLITE	Black & light - medium grey. Vf-Fine grained. Vv foliated, variable mod - well laminated (5cm - 1mm laminations) argillite (65%) with interlaminated lt. grey tuffaceous argillite (35%).	Top CTC	45	<p>- Strange <1-2mm roundish lt-med.grey "spots" as rel homog disse'mns 1-5% TH-O. Possible sel alt'n super- imposed, also appears to be localized within specific beds ie)</p> <p>Locally 3-10% diss py ie)</p> <p>100.12 - 100.20</p>	<p><1-2% coarse grained 3-8mm euhedral pyrite, as disse'm. pyrite traverses bedding planes : late.</p> <p>LITHO: BCD# 7630</p> <p>101.00 - 104.00</p>

HOLE NUMBER: CCF-16

MINNOVA INC.
DRILL HOLE RECORD

DATE: 17-December-1987

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Layering Layers are VFG argillite (Im-Sca) with rel sharp boundaries to Fg irregular 1mm-2cm layers of tuffaceous lt-med. grey argillite. Sediments are locally contorted (soft sed def'm) and have local synsed micro faults with offsets up to 2cm.	45	116.0 - 116.05 10-15% spots Alt'n(?) spots <1% - 1% from 115.45 - 135.33	M-Cg py disse in tuffaceous argillite layer. 114.44 - 114.64 3-5% Fg 2-3mm blebs py crude round outlines.	Top contact interingers somewhat but parallel to C/A 45. Argillite near contact is contorted (slump-bx)
		layering variable Layering variable but consistent over specific intervals i.e.)	45 to 60	Loc clay-mud gouge planes (see remarks) Loc w calc <1-mm. Thick veins at fault intervals.	Note loc glomopyrite CG py flowers 1.5cm across	Blocky core with greenish-grey clay-rich(?) frac coatings/gouge, minor graphitic coatings, part of minor faults, ie) 112.20 - 113.40 120.50 - 120.70 121.35 - 126.78 127.77 - 127.92
		111.5 - 116.00 C/A 45-50 deg.				Litho: BCD#7631 127.0 - 130.0
		117.0 - 119.0 C/A 25 deg.				
		Layering/laminations tend to thicken downhole along with distinct tuffaceous argillite "beds" 3-10cm rather than numerous thin interlaminations. Argillite increases downhole. Tuffaceous argillite consists of 15-30% Fg argillite & 85-70% Fp-rich Fg Cx tuff ie) 130.00 - 130.15				
		END OF HOLE				

HOLE NUMBER: CCF-16

DRILL HOLE RECORD

LOGGED BY: M.J. GRAY

PAGE: 4

HOLE NUMBER: CCF-16

ASSAY SHEET

DATE: 17-December-1987

Sample	From (m)	To (m)	Length (m)	GEOCHEMICAL								COMMENTS
				Cu ppm	Zn ppm	Pb ppm	Ag ppm	Au ppb	As ppm	Sb ppm	Au g/T	
7622	1.50	3.00	1.50	5	44	31	0.8	10	5	2		
7623	3.00	4.50	1.50	4	43	33	1.0	5	6	2		
7601	12.30	13.30	1.00	37	60	60	0.3	340	86	2		
7602	13.30	14.30	1.00	48	79	30	0.2	270	55	1		
7603	14.30	15.30	1.00	59	83	29	0.3	5	15	1		
7604	15.30	16.30	1.00	19	47	23	0.1	5	1	1		
7605	26.90	27.90	1.00	47	126	32	0.2	30	35	1		
7606	42.00	43.40	1.40	6	22	18	0.1	10	10	1		
7607	49.68	51.18	1.50	7	23	25	0.1	10	14	1		
7608	51.18	52.68	1.50	5	17	21	0.1	20	12	1		
7609	52.68	54.18	1.50	7	22	27	0.1	20	7	1		
7610	54.18	55.18	1.00	5	26	14	0.1	5	14	1		
7612	62.79	63.79	1.00	3	8	13	0.4	5	5	1		
7613	63.79	64.79	1.00	3	1	9	0.4	5	11	8		
7614	66.00	67.50	1.50	26	39	21	1.0	70	29	7		
7615	73.50	75.00	1.50	13	23	24	0.7	5	9	2		
7617	86.50	88.00	1.50	28	32	18	0.7	150	34	4		
7618	90.00	91.50	1.50	11	29	21	0.6	205	57	3		
7619	91.50	93.00	1.50	17	59	36	0.9	280	33	2		
7620	94.50	96.00	1.50	8	27	31	1.1	1050	131	4	1.20	
7621	96.00	97.50	1.50	43	87	31	1.5	730	117	5	0.99	

HOLE NUMBER: CCF-16

ASSAY SHEET

PAGE: 5

HOLE NUMBER: CCF-16

GEOCHEM. SHEET

DATE: 17-December-1987

Sample	From (m)	To (m)	Length (m)	SiO ₂ %	Al ₂ O ₃ %	CaO %	MgO %	Na ₂ O %	K ₂ O %	FeO %	MnO %	TiO ₂ %	Sr ppm	Ba ppm	Cu ppm	Zn ppm	Pb ppm	Ag ppb	Au ppb	As ppm	Sb ppm	Zr ppm	Tot %
7626	7.05	10.05	3.00	74.18	13.51	1.06	1.26	1.58	3.29	2.37	.02	.24	.01	.141	6	76	34	0.3	5	2	1	.013	97.68
7627	17.77	20.77	3.00	74.18	13.56	.68	.51	5.57	1.38	1.59	.04	.21	.02	.075	10	41	37	0.4	5	1	1	.016	97.84
7628	43.40	46.40	3.00	75.11	12.77	.25	.18	3.59	4.29	1.19	.02	.22	.01	.087	11	27	22	0.3	10	9	2	.017	97.72
7616	77.50	79.00	1.50	75.31	13.49	.68	0.24	5.67	1.16	0.97	0.04	0.20	.02	.01	10	21	20	0.6	10	8	1	.014	97.83
7629	79.00	82.00	3.00	74.36	13.89	.79	.24	5.21	1.61	1.37	.04	.20	.02	.055	4	30	28	0.08	5	6	1	.017	97.80
7638	93.00	94.50	1.50	71.51	14.63	0.99	.62	3.14	2.90	3.41	.05	.23	.02	.101	13	63	36	0.9	45	15	1	.020	97.61
7630	101.00	104.00	3.00	70.06	15.86	.70	1.31	.08	5.01	3.44	.03	.97	.01	.107	53	151	26	0.5	5	25	1	.017	97.58
7631	127.00	130.00	3.00	67.55	15.91	1.38	1.58	.09	4.33	5.43	.11	.87	.01	.085	51	180	23	0.6	10	1	1	.015	97.36

HOLE NUMBER: CCF-16

GEOCHEM. SHEET

PAGE: 6

HOLE NUMBER: CCF-12

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: **METRIC UNITS: X**

METRIC UNITS: X

PROJECT NAME: CHUCHUA
PROJECT NUMBER: 321
CLAIM NUMBER: CH 11
LOCATION:

PLOTTING COORDS GRID: SC2
NORTH: 12116.00
EAST: 9688.00E
ELEV: 1815.00

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 0.00

COLLAR DIP: -55° 0' 0"
LENGTH OF THE HOLE: 139.90m
START DEPTH: 0.00m
FINAL DEPTH: 139.90m

DATE STARTED: October 1, 198
DATE COMPLETED: October 3, 198
DATE LOGGED: 0.

COLLAR SURVEY: NO
MULTISHOT SURVEY: NO
RDR LOG: NO

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NO

CONTRACTOR: FRONTIER DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

FILE NUMBER: GCE-17

DRILL HOLE RECORD

LOGGED BY: M.J. GRAY

PAGE: 1

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 1.22	CASING					
1.22 TO 4.05	TUFFACEOUS CHERT	Light grey. Aphanitic - Very fine grained. Tr foliation, massive locally crudely layered tuffaceous chert. Mod- str fractured with limonitic fracture coatings. BOT CTC ? Broken up layers ?	70 50	1-8% white and medium brown<1-mm roundish ankerite(?) disse'm appear to be disse'm-style envelopes proximal to fractures.	<1-2% F-MG PY, Ave 1% as disse'm	V blocky Throughout interval. LITHO: BCD37632 1.22 - 4.00
4.05 TO 5.47	ARGILLITE DEBRIS FLOW - SLUMP BRECCIA (INCLUDES FBP CX T. FRAGS)	Dark - med. grey. Buff frags. Very fine grained/ 2mm-5cm clasts . W foliated, shows crude alignment of fragments in debris flow/slump breccia. Note argillite and cherty frags near top (4.05m) of interval and Cx T frags near base. Frags range 2mm-5mm round - subangular, large frags are round. BOT CTC Irregular Mx 60%, frags 40% 40% Cx T, 20% Cherty T., 40% Arg.	50	5-10% brown <1-mm carbonate(?) sim to above (no fizz c HCL) Layering controlled and tend to rim frags.	<1-1% CG disse'm euhedral,py	
5.47 TO 30.56	RHYODAC FBP CX TUFF (MINOR LITHIC FRAGMENTS)	Light pale green. Very fine mx. F-C Cx. Ww-w foliated, massive locally crude layered rhyodac FBP CX tuff with minor siliceous tuff fragments. REL homogeneous looking. Look unit with variations in qtz & FP phenocryst content and size. Qtz eyes range <1-2mm (ave 1mm) 5-15% (ave 8%) FP phenos range <1-4mm (ave 2mm) 5-15% (ave 12%) subhedral, white. Fragments range 5mm-5cm (ave 1-2cm),<1-3% (ave <1%) Lt.grey siliceous QFP phryic? Bot CTC disrupted, fault ----- Layering ? Fol'n. ----- Frags poss rhyolite QFP of below unit. (stratigraphically lower) 5.47 - 9.45 5-8% QE, 10-12% FP, Phenos, 1-2% frags. 9.45 - 10.40 F QFP XL T 10% QE, 5% FP	~W - M pervasive Ser'z, Ave W. ie 5.47 - 15.00 W 15.00 - 18.50 M-W 18.50 - 28.10 W 28.10 - 29.56 W-M 29.56 - 30.56 M/M-S 70 25 70	WVS - Loc Tr Fg Dissem Fg Py Blocky (<1/2cm) 1-4mm Qtz veins Throughout C/A 5-15 deg.		Note limonitic envelopes on fractures +/- staining +/- qtz, also lim disse'm with FP at 5.47 - 11.00 LITHO; BCD37633 14.00 - 17.00 NOTE Qtz eyes are med grey and round shape. NOTE Gouge on fract e 22.50 - 22.53 C.A. 80 deg. 24.65 - 24.66 C.A. 5 deg. 28.46 - 28.48 C.A. 70 deg. 29.26 - 29.27 C.A. 45 deg.

HOLE NUMBER: CCF-17

MINNOVA INC.
DRILL HOLE RECORD

DATE: 17-December-1987

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		10.40 - 11.00 5-10% QE, 10% FP, 1% Frags 11.00 - 11.40 5-10% QE, 5% FP F XL T 11.40 - 21.40 5-10% QE, 10% FP, <1-3% Frags 21.40 - 22.50 F BFP XLT 8-10 QE, <5-8% FP, 2% Frags. 22.50 - 30.56 5-10% QE, 10-15% FP, <1% Frags				29.74 - 29.75 C.A. 85 deg. 29.89 - 30.06 C.A. 80 deg. 30.45 - 30.50 C.A. 70 deg. Blocky core @ 23.46 - 25.40m 27.30 - 30.56m FP phenos appear crudely aligned. LITHO; BCD3 26.40 - 29.40
30.56 TO 38.75	RHYOLITE FQP DYKE(?)	Pale dull lt. green Aphanitic-MX. F-M CX. Massive, tr foliation 10% FP 2-3mm subhedral-euhedral, 3-5% 1-2mm qtz eyes (locally greenish) MX pale green Aph. BOT CTC - Unclear -----	80 ?	VW-W 1-3mm Qtz +/- lim +/- Mn C/A 30-80 deg. Sel w Ser'z of 5% FP	TR-4% F-MG Diss. Py	NOTE up to 2cm limonite envelopes on fractures.
38.75 TO 39.40	RHYODAC CROWDED FQP CX-T	White and med. pale green. VF MX. M-C CX VW-W foliated, rel homogeneous looking crowded FQP CX T. 25-30% 1-4mm (Ave 2-3mm) euhed-subhed FP. 10% <1mm-1mm qtz eyes. Bot CTC ? Irregular. -----	20	M/M-S Ser'z MX VW-W 3-30mm Qtz veins as above 50 deg C/A.	Tr- <1% F-MG Diss Py.	
39.40 TO 42.37	RHYOLITE FQP DYKE(?)	Pale, dull light green. Aph-Mx. F-M Cx. Same as 30.56 - 38.75 BOT CTC -----	80	Similar to 30.56 38.75 m. Note pseudobox look 4.17 - 42.37 Poss due to contact proximity	<1% F-MG Diss Py	
42.37 TO 51.82	RHYOLITE FQP CX +/- LITHIC T	Lt-med green/grey. VF-Aph Mx. F-C Cx. L.Frags. W foliated rhyolite FQP CX +/- Lithic T. BOT CTC? Tran ? 42.37 - 46.09 FQP Crowded Cx T		Blocky 1-2mm qtz +/- Lim +/- Mn veins M/M-S ser'z MX & FP Phenos	Tr <1% disse py	Note FP CX are aligned C/A

HOLE NUMBER: CCF-17

DRILL HOLE RECORD

LOGGED BY: M.J. GRAY

PAGE: 3

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		15-25% 1-5mm (ave 2-3mm) FP, 5-10% 1mm Qtz.eyes 46.09 - 51.82 QFP CX-Lithic T 10-15% 1-2mm FP 10-15% <1-<2mm qtz eyes 2-SZ 3-30mm Rhy, frags rounded.		Variable VW-M Ser (ave v)		
51.82 TD 67.05	RHYOLITE FDP CX +/- LITHIC T	Light dull pale green - beige. Aph Mx, F-C Cx. Massive Tr fol'n similar to 30.56 - 38.75m Locally poss Cx tuff in ser'z section 52.7 - 54.0 Fol'n. ? -----	40	Loc. W/W-M ser'z @ 52.7 - 54.0 in Mx prox to frac. Variable VW-M 1-15mm qtz veins C/A 15 deg. (@ 56.0 - 57.0 4mm veinlets) Patchy irreg or stuk blk alt'n (carbon related) ie) 63.40; 5cm rounded patch, looks embayed by green Mx. 64.03 - 66.45 Stockwork looking blk - m. grey leaving pseudobx with host fragmented corroded. Local selective v (green) ser'z of 10-20% FP @ above alk alt'n interval.	Tr-5% Py as F-CG disse'm, also disscon str with qtz veins ie) 51.82 - 54.00a. Tr py 54.00 - 56.00; 2-3% py 56.00 - 57.40; 3-5% Py as disse'm & disscon str. 57.40 - 60.00 2-3% py diss & str or diss with qtz veins. 60.00 - 62.75 1-2% diss. M - CG Py 62.75 - 66.10 1-2% Py F-MG Py 66.10 - 67.05 Tr Py	Geochem: BCD# 54.54 - 56.04 Geochem: BCD# 56.04 - 57.54 Geochem: BCD# 57.54 - 59.04 Geochem: 59.04 - 60.54 Geochem: 64.60 - 66.10
67.05 TD 70.46	FAULT ZONE	Vlt-m green, pale green. Mx-Vf, F-M Cx. Fault in above QFP rhyolite, has intermit. gouge planes, loc slicken lines. Pale green-buff bleached color BOT CTC 230° Gouge 60 & 30 deg.		W ser'z Mx loc S with clay. S bleached. M-S fractured, crackle bx. W chl? loc along fractures.	1-3% py as FG disse'm & disscon <1mm str.	
70.46 TD 139.90	RHYOLITE FDP INTRUSIVE	Variable pale green to dk grey - blk to whitish buff/lt grey. Aph-Mx, F-C Cx. Massive rhyolite FDP intrusive sim to prev FDP. FP 10-15% (ave 10%) 1-4mm (ave 2-3mm) Lath-tabular euhedral-subhedral qtz eyes. 3-8% (ave 3-5%) <1-2mm (ave 1mm) Med.grey round fractured looking qtz eyes, mx is aph, v.hard, variable color due to alt'n/bleaching. Minor gouge planes at		Variable perv to pseudobx to stuk to patchy to veinlet blk alt'n (carbon, Ti, SiO ₂ , related). ie) 70.46 - 73.10 5% patchy, local v stuk. 75.83 - 76.83 30% as pseudobx & stuk 77.86 - 83.64 40-50% as pseudobx, loc stuk 84.35 - 85.33 60% as pseudobx/pervasive	Tr-3% disse'm F-CG py. Loc 3% in white-lt grey altered sections (albite-silica?) 70.46 - 72.50 Tr Py 72.50 - 76.23 1-2% FG PY (Ave 22) 76.23 - 81.20 <1% FG Py 81.20 - 86.35	Note: In blk patchy alt'n the patches appear to be cx-cut by irreg fract with beige-sl green envelopes, similar material that hosts the blk alt'n.

HOLE NUMBER: CCF-17

MINNOVA INC.
DRILL HOLE RECORD

DATE: 17-December-1987

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		END OF HOLE		88.90 - 89.20 35% as pseudobx/stvk 90.20 - 90.83 70% perv/pseudobx 91.53 - 92.73 70% perv/pseudobx 92.73 - 93.56 5% patchy 94.67 - 95.87 <5% patchy 95.87 - 129.64 M. >90% perv, minor local pseudobx as faint beige-grey outlines (116.0 - 120.73) 129.64 - 132.0 5% patchy & veinlet controlled 132.34 - 138.00 50% pseudobx (blk as Mx, beige frags) 139.00 - 139.90 Pseudobx-stvk 30% blk alt'n. Loc mod bleached beige-lt.green +/- grey sections with v sel ser'z (Lt green) of FP phenos + whitish beige ragged bleached rims on phenos, mottled looking sections. Loc crackle Bx. (poss the albite zone?) ie) 72.84 - 75.88 76.82 - 77.82 77.82 - 78.80 Patchy 81.40 - 84.38 Loc crackle Bx. Alt'n in pseudo frags. 87.17 - 90.20 Loc. lt. apple green K-Rich (?) ser sections in Mx (although hard) These probably also correspond with the preceding bleached alt'n. ie) 85.43 - 86.03	1-3% F-CG Py (Ave 1-2%) 87.07 - 90.20 1-2% F-CG Py. 90.20 - 94.79 Tr -<1% py 94.79 - 130.40 <1% py 130.40 - 132.14 1-2% py. 132.14 - 132.29 3% CG Py 132.29 - 136.33 <1-2% py 136.34 - 139.90 Tr py	

HOLE NUMBER: CCF-17

DRILL HOLE RECORD

LOGGED BY: M.J. GRAY

PAGE: 5

HOLE NUMBER: CCF-17

MINNOVA INC.
DRILL HOLE RECORD

DATE: 17-December-1987

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
				VW-loc m-s qtz veins <1-3mm Thick M-S in bleached sections.		

HOLE NUMBER: CCF-17

DRILL HOLE RECORD

LOGGED BY: M.J. GRAY

PAGE: 6

HOLE NUMBER: CCF-17

ASSAY SHEET

DATE: 17-December-1987

Sample	From (m)	To (m)	Length (m)	GEOCHEMICAL						COMMENTS
				Cu ppm	Zn ppm	Pb ppm	Ag ppm	Au ppb	As ppm	
7611	130.40	132.30	1.90	11	49	36	0.9	5	32	3

HOLE NUMBER: CCF-17

ASSAY SHEET

PAGE: 7

HOLE NUMBER: CCF-17

GEOCHEM. SHEET

DATE: 17-December-1987

Sample	From (m)	To (m)	Length (m)	SiO ₂ %	Al ₂ O ₃ %	CaO %	MgO %	Na ₂ O %	K ₂ O %	FeO %	MnO %	TiO ₂ %	Sr %	Ba ppm	Cu ppm	Zn ppm	Pb ppb	Ag ppb	Au ppb	As ppm	Sb ppm	Zr %	Tot %
7632	1.22	4.00	2.78	87.71	5.24	.11	.52	.04	1.77	2.00	.02	.25	.005	.128	40	41	12	0.7	5	7	2	.005	97.8
7633	14.00	17.00	3.00	72.57	14.58	1.04	1.60	2.00	3.96	1.68	.03	.21	.01	.085	7	39	39	1.0	5	6	1	.016	97.77
7634	35.00	38.00	3.00	74.81	13.58	.48	.25	4.14	3.01	1.09	.04	.20	.02	.098	7	42	49	1.0	5	23	1	.017	97.72
7635	64.00	67.00	3.00	73.37	13.77	.40	.14	3.49	4.83	1.45	.03	.20	.01	.093	11	43	32	1.1	5	21	2	.017	97.80
7636	97.00	100.00	3.00	72.05	14.37	.38	.15	3.58	5.76	1.24	.02	.20	.01	.072	8	39	29	0.8	5	10	2	.014	97.85
7637	127.00	130.00	3.00	71.23	14.26	.70	.38	2.76	5.31	1.94	.05	.21	.01	.090	18	38	27	1.0	5	12	3	.018	96.46

HOLE NUMBER: CCF-17

GEOCHEM. SHEET

PAGE: 8

