1988 SUMMARY OF EXPLORATION ACTIVITIES

MAGGIE OPTION

PN 618 826086

Owner: International Maggie Mines Ltd.
Operator: Minnova Inc.

April 1, 1989 C. M. Burge

MINNOVA

Minnova Inc.
Mining Innovation
4th Floor
311 Water Street
Vancouver, British Columbia
V6B 1B8
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April 1, 1989

International Maggie Mines Ltd.,
422-470 Granville St.,
Vancouver, B.C.
W6C 1V5

Dear Sirs:

Re: Minnova/International Maggie Option

Please find enclosed a year-end report detailing exploration work done by Minnova Inc. on the Maggie property in the Indian River valley in 1988. Please feel free to examine the data at your convenience at our Water St. office

Yours truly

Colin Burge
Exploration Geologist

MINNOVA Inc.

Mining Innovation

SUMMARY OF EXPLORATION ACTIVITIES
MAGGIE OPTION
P.N. 223,618
INDIAN RIVER AREA

OWNER: INTERNATIONAL MAGGIE MINES LTD.

OPERATOR: MINNOVA INC.

APRIL 6, 1989 **C.M. BURGE**

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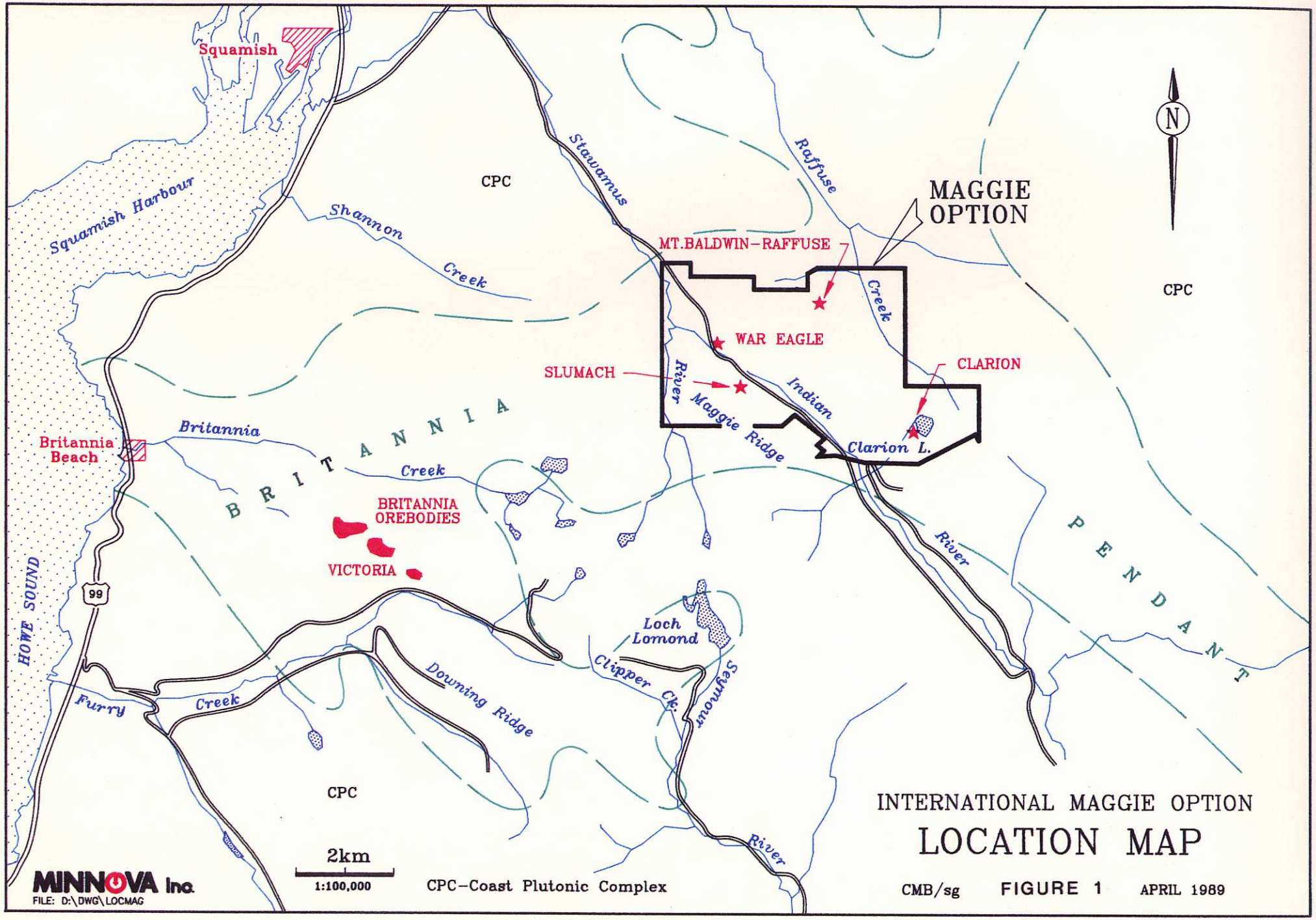
INTRODUCTION

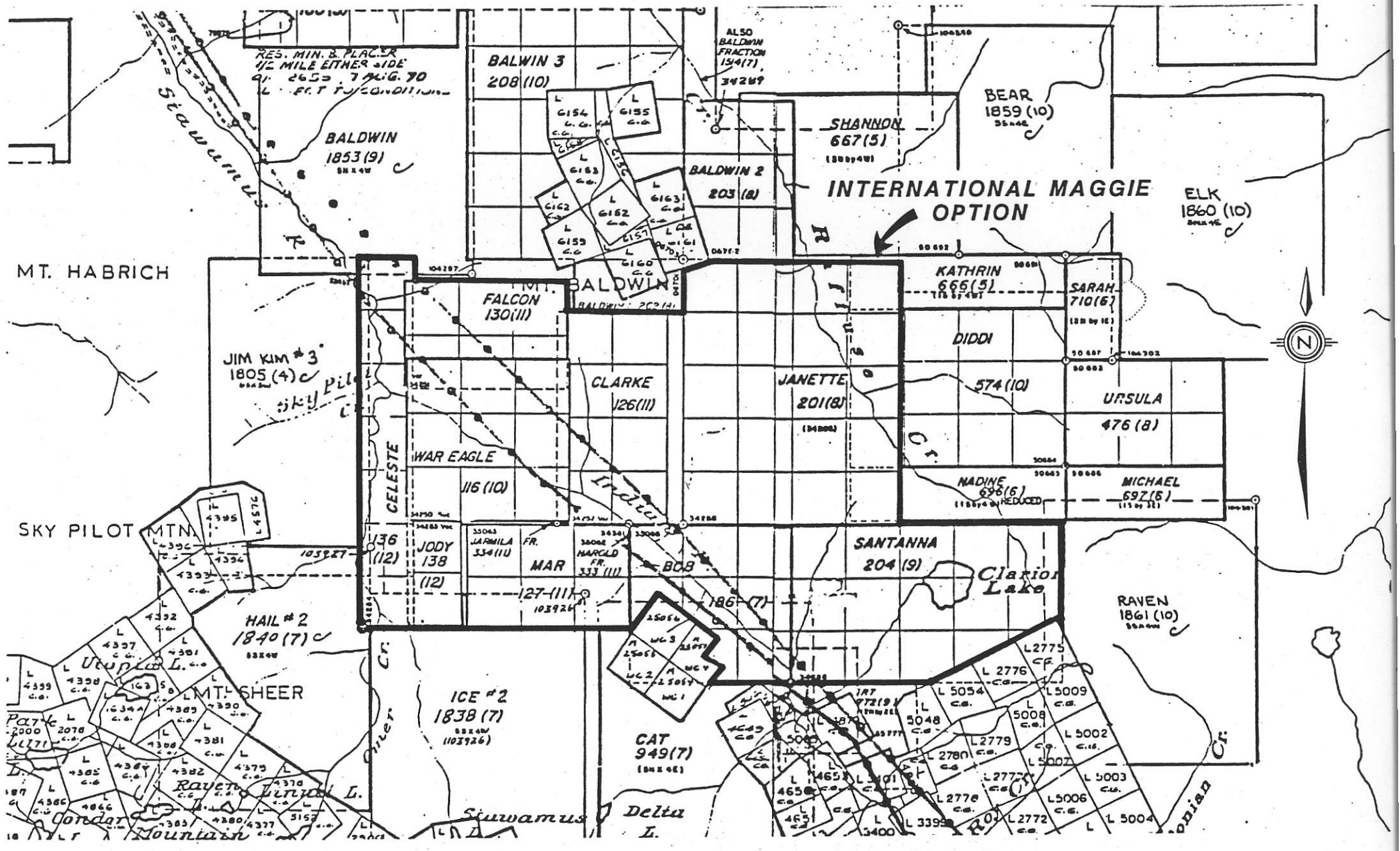
The International Maggie option is made up of 84 units located in the Indian River valley, 10 km. southwest of Squamish, B.C. The property is underlain by volcano-sedimentary rocks assigned to the late Jurassic to early Cretaceous Gambier group (Roddick, 1965). These rocks form an upright southwest dipping and facing panel that is interpreted to lie stratigraphically below the Britannia Mine Sequence, host rocks of the prolific Britannia orebodies. The Britannia mine produced over 50 M tons of copper ore and operated continuously from the turn of the century until 1974. The Britannia deposit is a volcanogenic massive sulphide of the Kuroko type. The precious metal content of this deposit was remarkably high and over the mine life some 500 thousand ounces of gold was produced from the massive copper-zinc orebodies and quartz veins of the No.5,8 and east Bluff ore zones.

Exploration work done in the Indian River area prior to Minnova has been sporadic and with limited success. The current program has focused on the Slumach area however a fully integrated exploration approach is being applied to the entire Indian River valley portion of the property. This report will summarize the 1988 activities and review earlier work in its current frame of reference.


Squamish
Squamish Harbour
Shannon Creek
CPC
Stawamus
Raffuse
MAGGIE OPTION
MT.BALDWIN-RAFFUSE
WAR EAGLE
SLUMACH
River
Maggie Ridge
Indian
Creek
CLARION
Clarion L.
CPC
N
Britannia Beach
Britannia Creek
BRITANNIA
BRITANNIA OREBODIES
VICTORIA
HOWE SOUND
99
Furry Creek
Downing Ridge
Loch Lomond
Clipper Ck.
Seymour River
PENDANT
CPC
2km
1:100,000
CPC-Coast Plutonic Complex
MINNOVA Inc.
FILE: D:\DWG\LOCMAG
INTERNATIONAL MAGGIE OPTION
LOCATION MAP
CMB/sg
FIGURE 1
APRIL 1989

Minnova Program

Minnova acquired the property in the spring of 1987 after previous workers had conducted an exhaustive search of the War Eagle area for massive sulphides. A total of about **5000 meters** was drilled by Placer Development Limited in 1978-9 and by Maggie Mines in 1981-2. It is now recognized that this work failed to test the critical stratigraphy. Lithogeochemical sampling of the Maggie Mines drill core by Minnova failed to identify any alteration indicative of syngenetic ores. Early in 1987 mapping and lithogeochemistry by Minnova quickly established the existence of a broad biotite-cordierite alteration zone, located 1 km. southeast of the War Eagle and made the important discovery of the highly anomalous Slumach rhyolite unit. The Slumach rhyolite is located stratigraphically above the Mar Andesite which hosts the Slumach gold bearing quartz-sulphide veins discovered and drilled by Maggie Mines in 1983. The 1987 fall drill program totaling **1226 meters** was designed to test the strike and downdip extent of the Slumach quartz veins and evaluate the Slumach rhyolite as a possible host for volcanogenic massive sulphides. The first phase of the program was unsuccessful and severely limits the potential of the Slumach vein system however all five holes designed to test for volcanogenic massive sulphide mineralization provided significant values within the Slumach rhyolite (see figure 4). Further work included a pole-dipole IP survey and reconnaissance mapping in other areas of the property including the Clarion Lake area the source of highly anomalous heavy mineral concentrates.



NTS 92G/10W,11E

INTERNATIONAL MAGGIE OPTION CLAIM MAP

MINNOVA

0 1 2km

1: 50,000

FIGURE 2

Location, Access and Physiography

The Maggie property is located at the divide between the Indian River valley and the Stawamus Creek valley approximately 10 kilometers southwest of Squamish (Figure 1). The stratigraphy on the Maggie property is 8 kilometers northeast of the former Britannia Mine and is separated from the mine stratigraphy by an uninterrupted sequence of volcanic rocks. The property is accessed by a rough logging and powerline access road which turns south from the main Mamquam valley logging road about four kilometers east of Hwy 99, just south of Squamish.

The Maggie grid (L7W to L15E) is centered at the divide and has been located so that grid locations referred to by previous workers (Placer and Maggie Mines) can be found using the Minnova grid.

The valleys are typically U -shaped and sustain abundant original growth douglas fir and hemlock. The rugged nature of the property has hindered the progress of mapping and geophysics.

Property Status

The International Maggie Option consists of 11 claims staked by Maggie Mines Ltd.between 1976 and 1978 (see Figure 2). In 1985 all interests were transferred to International Maggie Mines Ltd and an agreement was reached with Minnova in April of 1987 whereby Minnova can earn a 70% interest by making cash payments and exploration expenditures.

Claim	Record No.	Units	Expiry Date
Jarmilla Fr	334	1	Nov. 3,1998
Harold Fr	333	1	Nov. 3,1998
Mar	127	6	Nov.15,1998
Bob	186	9	Jul.27,1993
Celeste	136	7	Dec.16,1998
Jody	138	2	Dec.24,1998
Falcon	130	6	Nov.19,1998
Santanna	204	15	Sep. 2,1993
Janette	201	20	Aug.29,1993
Clarke	126	8	Nov.15,1998
War Eagle	116	9	Oct.18,1993

GEOLOGY

Regional Geology

The International Maggie option is underlain by volcanic/sedimentary rocks of the Britannia pendant possibly of late Jurassic to early Cretaceous age as well as plutonic rocks of the Coast Plutonic Complex. The intrusive rocks are of a variety of compositions and have been dated at about 100 million years.

Geology of the Maggie Property

The volcanic-sedimentary assemblage of the Maggie property is interpreted to be structurally and stratigraphically below the basalt flows and argillites exposed on Goat Mountain which dip gently south to form the footwall to the Britannia mine sequence. The Maggie stratigraphy forms a gentle to moderately west dipping and facing panel that displays local dip reversals especially in the vicinity of synvolcanic intrusive bodies. The lack of a distinct stratigraphic markers and varying degrees of

hornfelsing makes correlation of units across the property difficult however a general stratigraphic succession has been recognized. A dominantly mafic pyroclastic unit with minor mafic flows forms the base of the Maggie stratigraphy followed by a succession of felsic pyroclastics flows, and minor mafic flows and sediments. These units have been named the Mar andesite and the Slumach rhyolite respectively. The Slumach rhyolite is overlain by a thick sequence of crystal tuffs and turbiditic sediments referred to as the Maggie epiclastics. The youngest unit exposed on the gridded portion of the property is the Maggie ridge basalt a tholeitic basalt flow which may be intrusive in some places (see Figure 3). This suggests that the Maggie ridge may have been the axis of rift-type volcanism. Numerous vertical dikes of similar composition to the Maggie ridge basalt cut underlying units. This basalt can be correlated with units exposed on Sky Pilot mountain to the west and the Maggie epiclastics are similar to those exposed at Sky Pilot except that they have a higher felsic component presumably due to their proximity to the Slumach felsic sequence. Therefore the Slumach rhyolite represents the end of felsic activity in the Britannia pendant until the building of the Britannia composite dome complex adjacent to the Britannia Mine. The Slumach felsic package is derived from two felsic centers (quartz phyric flow/domes) located just north of the War Eagle adit and just to the southwest of the southern property boundary. The underlying Mar andesite exhibits strong biotite-cordierite hornfelsing in two locations on the property, in the Slumach area and adjacent to a quartz-diorite body in the valley floor. A major northeast trending synvolcanic fault located near L8E in the Slumach area has downdropped stratigraphy to the northwest approximately 200 meters. The significance of this fault is that it places the War Eagle stratigraphy (and the bulk of the drill testing done in that area) in the Slumach hanging wall stratigraphy.

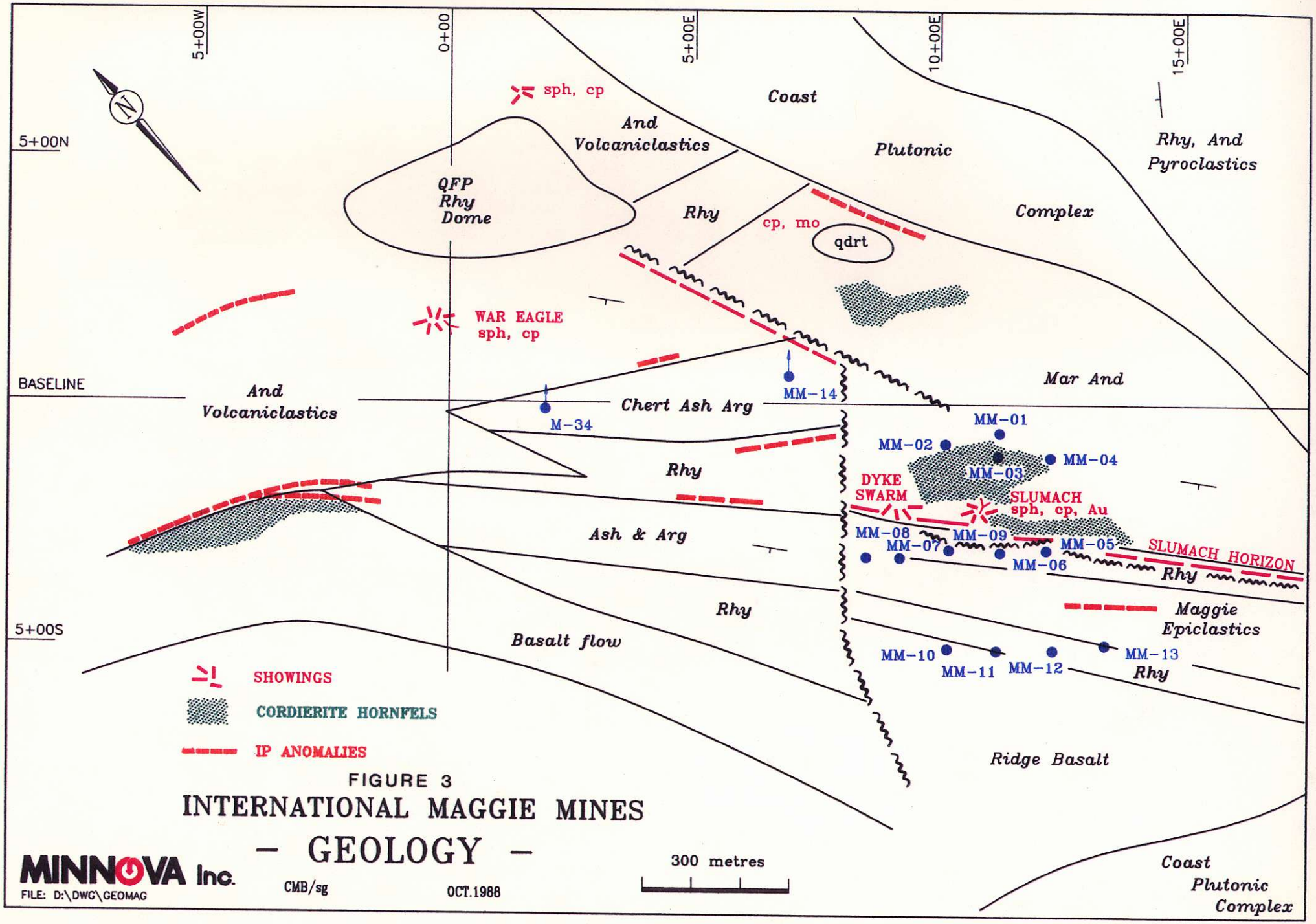


FIGURE 3

INTERNATIONAL MAGGIE MINES

– GEOLOGY –

MINNOVA Inc.

FILE: D:\DWG\GEOMAG

CMB/sg

OCT.1988

Geology of the Slumach Area

The Mar andesite, the Slumach rhyolite and the Maggie epiclastics are all exposed in the Slumach area. The Mar andesite is usually (but not always) affected by a strong to intense biotite-cordierite alteration. The hornfels is derived from andesite flows, lapilli and crystal tuffs and interpreted to represent a contact metamorphosed equivalent of a volcanogenic massive sulphide deposit's alteration pipe. The Slumach rhyolite consists of a monolithic, clast-supported, felsic lapilli tuff. The fragments are angular to sub-angular and are sometimes quartz- phyric. This unit may represent a proximal phase flow breccia and hosts the zinc mineralization in all 10 drill holes testing for volcanogenic massive sulphides. This unit is interbedded with felsic ashes, cherty ashes and intensely hornfelsed titaniferous rocks possibly representing altered sediments. A felsic tuff-breccia overlies the mineralized and altered portion of the Slumach rhyolite. This unit has a peculiar marbled appearance due to the degree of hornfelsing affecting it. A massive argillite unit overlies the Slumach rhyolite and forms the base of the Maggie epiclastics. This sequence has been mapped out from L8E to the southern property boundary.

There are a variety of dikes crosscutting the Slumach stratigraphy. A series of shallow southeast dipping young dikes occur and are usually 1 to 3 meters in width. As previously mentioned numerous vertical basaltic dikes exist and although they are usually only few meters in thickness drill holes normal to the stratigraphy may encounter these dikes over considerable intervals.

The units in the Slumach area dip moderately (45^0 to 55^0) to the southwest and into the Maggie ridge and strike north (145^0 to 155^0). Bedding-cleavage intersections indicate that syngenetic mineralization in the Slumach area will have a horizontal to shallow to southeast plunge.

1988 PROGRAM

Mapping Program

The purpose of the geological mapping program carried out during the summer was to define the stratigraphic and structural setting of the Slumach stratigraphy. The mapping was done at a 1:2000 scale using the 1987 grid for control, as well as 1:5000 scale in the Sky Pilot and Mt. Baldwin areas. The 1:2000 scale work was focused on areas identified in 1987 considered problematic and work in the high country to the east and west of Maggie was done in an effort to get a better understanding of the regional setting. The principal aim of the mapping program, however, was to identify and trace out the Slumach horizon southeast of the drilled stratigraphy and to the northwest across the L8E fault.

Drill Program

In order to adequately test downdip potential of the Slumach stratigraphy an 850 meter steep drill access road was constructed. The road provides excellent exposures of the Maggie epiclastics, the hanging wall stratigraphy to the Slumach rhyolite. Exposures of the Slumach hanging wall felsic unit were found to contain abundant sulphide fragments. The stratigraphic and structural information provided allowed us to correlate stratigraphy with the War Eagle area to the northwest.

The drill program consisted of a total of 1823 meters drilled in five holes. MM-10 through MM-13 were designed to test the downdip potential of 1987 drill intersections within the Slumach rhyolite sequence. MM-14 was drilled to test the geologic interpretation that the Slumach stratigraphy has been downdropped to the valley floor northwest of the L8E fault.

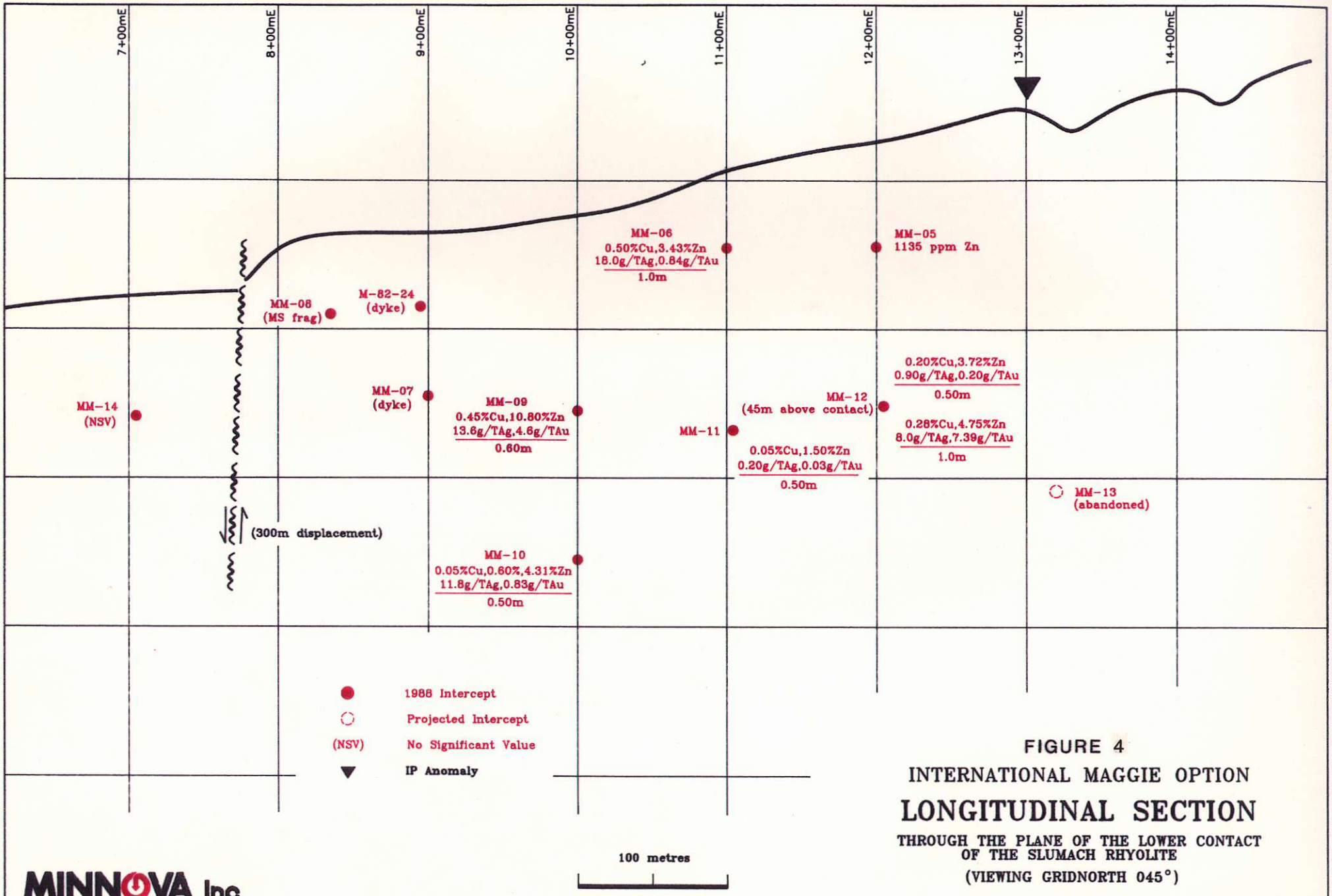


FIGURE 4

INTERNATIONAL MAGGIE OPTION

LONGITUDINAL SECTION

THROUGH THE PLANE OF THE LOWER CONTACT OF THE SLUMACH RHYOLITE

(VIEWING GRIDNORTH 045°)

MINNOVA Inc.

FILE: D:\DWG\MAGLONG

CB/sg

DECEMBER 1988

Geophysics

Two drillholes testing the Slumach stratigraphy were successfully logged using borehole pulse EM methods (MM-12 and M-82-24). The holes probed were located on L12E and L9E respectively. The hanging wall stratigraphy was surveyed in hole MM-11 on L11E. MM-12 was surveyed with the machine on the drill hole and M-82-24 was the only hole which had not collapsed in the Slumach area.

RESULTS

Mapping Program

The program arrived at the following important conclusions which have a direct bearing on our current program:

1. The Slumach stratigraphy is part of an upright west facing panel with no major folds. Local dip reversals do exist especially in the vicinity of intrusive bodies.
2. The Slumach rhyolite is traceable for over 1 km. to the southeast and may occur to the southwest (the backside) of the Maggie Ridge.
3. Bedding/cleavage intersections measured predict a shallow southeast plunge to any syngenetic mineralized zones.
4. The Slumach stratigraphy has been downdropped toward the northwest across the L8E fault and that the Slumach horizon may only be represented by the first appearance of felsic ashes above the footwall andesites.
5. Lateral facies changes are frequent and that stratigraphy in the central portion of the Maggie grid represents a basinal environment that has excellent potential for hosting volcanogenic massive sulphides (L2E to L8E).

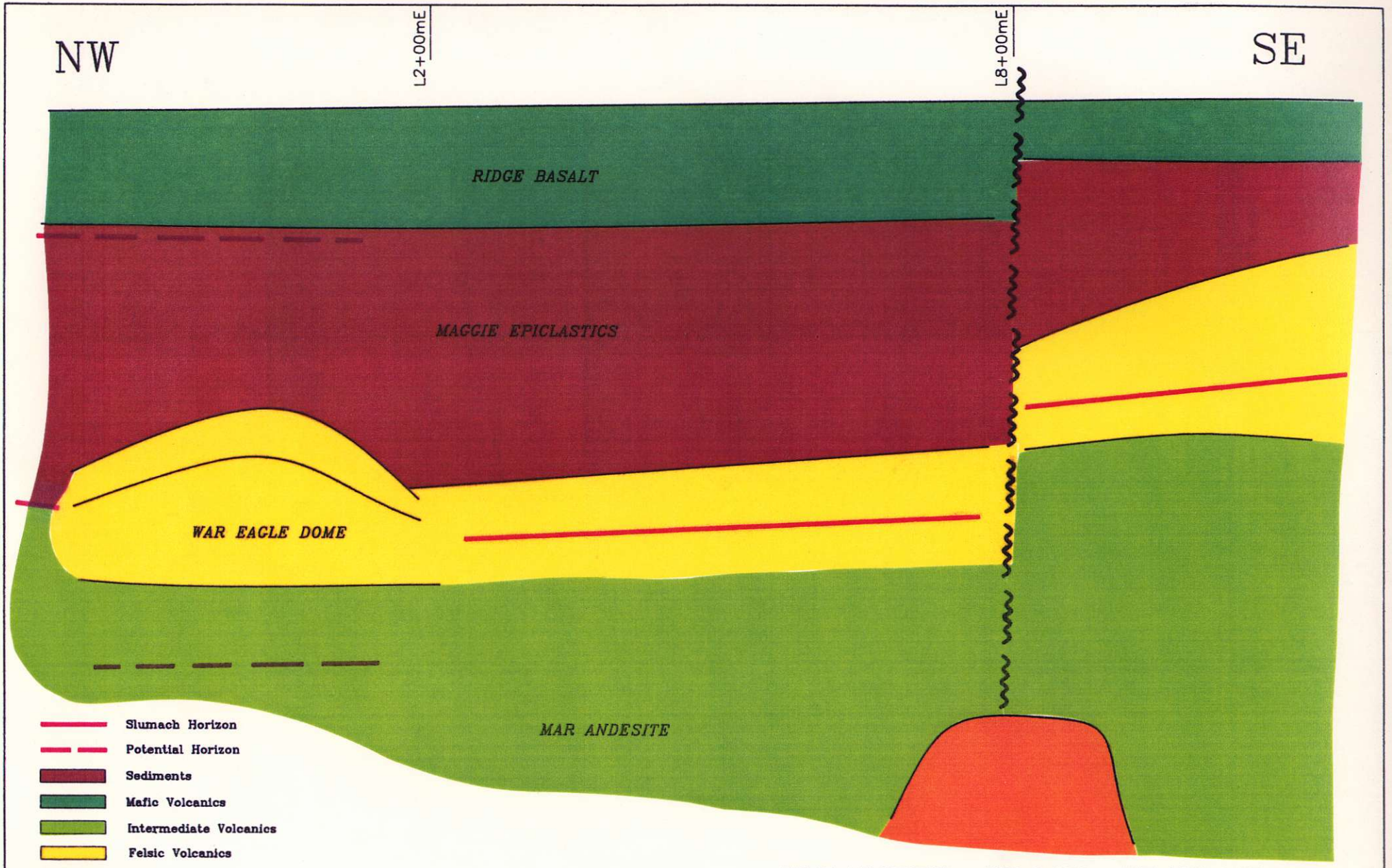
6. The discovery and definition of a large area of semi-massive pyrite located just east of the of the Slumach drilled stratigraphy (L13E to L14+50E)

7. The recognition of porphyry style mineralization (chalcopyrite-molybdenite) in the vicinity of the diorite intrusion in the valley floor (L8E to L10E, 4N)

Drill Program

Four of the five holes drilled in 1988 encountered significant mineralization within the Slumach rhyolite while the fifth hole (MM-14) successfully identified the Slumach stratigraphy northwest of the L8E fault. The Slumach rhyolite thickens toward the southeast and similarly zinc mineralization occurs over wider intervals in this direction also. MM-12 and MM-13 encountered over 50 and 70 meters of zinc mineralization respectively. The zinc occurs as disseminations and aggregates within a biotite flooded rhyolite fragmental unit. Numerous quartz-sphalerite stringers were also intersected in MM12. These may represent distal expressions of volcanogenic massive sulphide deposits and are therefore considered to be most encouraging. The final hole of the 1988 program, MM-13, drill testing the Slumach stratigraphy had to be abandoned within the mineralized Slumach rhyolite due to technical difficulties.

The holes testing the Slumach stratigraphy each encountered extensive soda and calcium depletion within the Slumach rhyolite as well as the underlying Mar andesitic rocks. The Slumach rhyolite also displays considerable barium enrichment. This alteration is typical that which accompanies Kuroko-type massive sulphide deposits and represents a footwall alteration "pipe".



MINNOVA Inc.

IDEALIZED CROSS-SECTION THROUGH THE MAGGIE PROPERTY

FIGURE 5

Each of the holes drilled (except MM-14) encountered a bedding parallel fault at the top of the mineralized sequence of the Slumach rhyolite. The possibility exists that this fault has offset what may be ore bearing stratigraphy from the footwall rocks and if the movement has been left lateral then drill testing to the southeast of Slumach is essential regardless of whether footwall alteration exists or not.

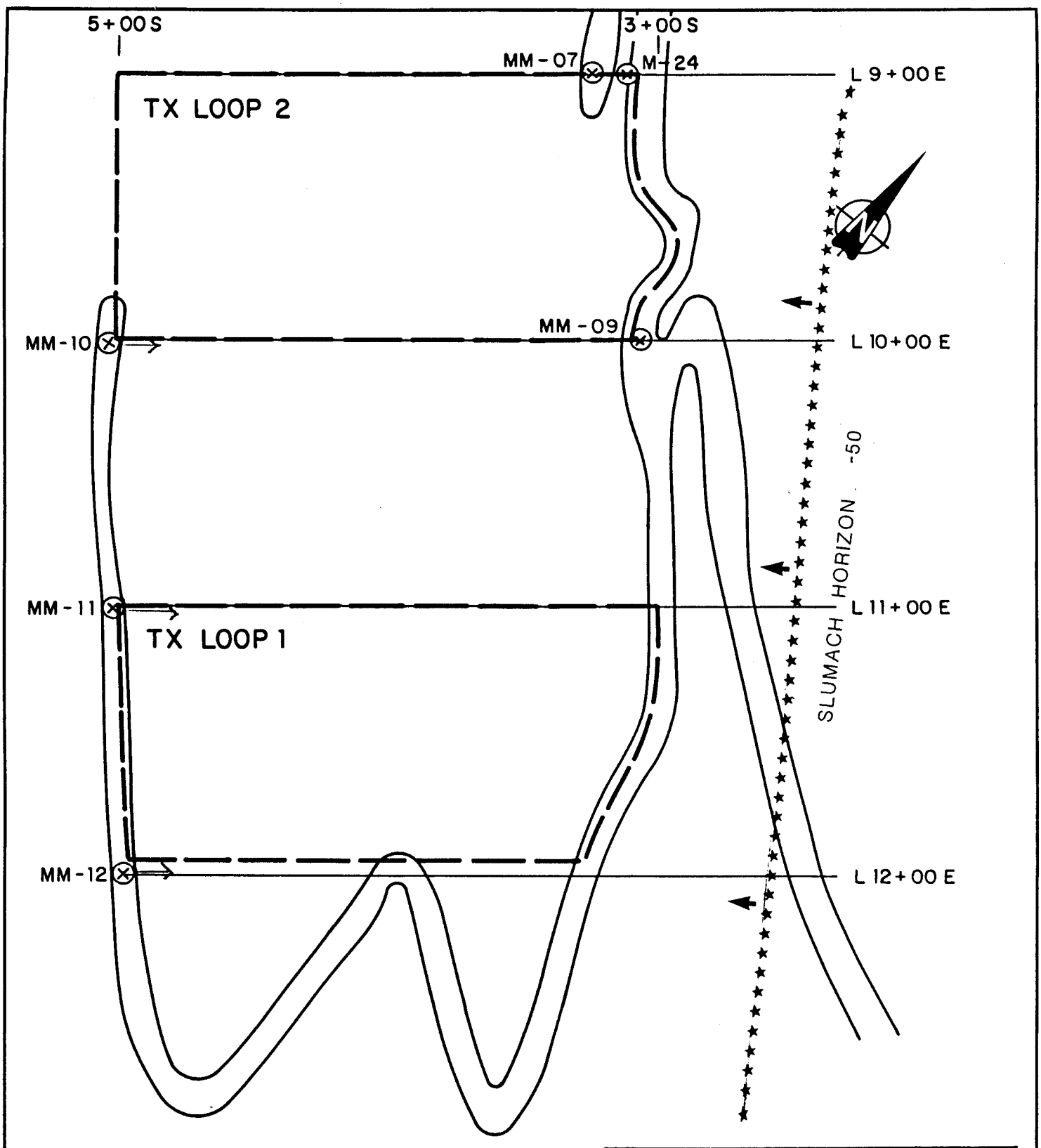
MM-14 was successful in identifying the Slumach stratigraphy to the northwest of the L8E fault. The Slumach horizon is anomalous in copper (2318 ppm) and the footwall mafic rocks show only minor amounts of soda depletion. The resulting displacement on the L8E fault is in the order of 300 meters

Geophysics

Borehole geophysical surveys conducted on drill holes MM-11,12 and M-82-24 unfortunately did not provide any significant anomalies. This suggests that it is unlikely that massive mineralization exists within a 50 meter radius of these holes. The hanging wall stratigraphy only was surveyed in hole MM-11 as the hole collapsed at the fault located at the top of the mineralized sequence.

MM-12 did not provide a significant anomaly despite numerous intersections of zinc rich material. A narrow intersection of massive sphalerite at 322.25 meters did not conduct using an ohm-meter.

The pulse testing in M-82-24 did detect a possible off-hole type anomaly below the hole. This may represent sulphide mineralization associated with the west extension of the Slumach vein system. The possibility exists however that a deeper yet to be discovered horizon exists within the Mar andesite and extending this hole should be considered.



MINNOVA INC.	
TEM Borehole Survey	
MAGGIE MINE LOOP LOCATIONS	
NOT TO SCALE	DATE : Oct. 1988
QUANTECH CONSULTING INC.	

FIGURE 6

Heavy Mineral Sampling Survey

To date over 120 heavy mineral samples have been collected throughout the Britannia-Indian River area. A number of anomalous creeks have been located all worthy of follow-up work. By far the most spectacular results come from the creeks in the Clarion Lake area, a remote ridgetop lake. The heavy mineral concentrates were highly anomalous in gold, lead and arsenic as well as having copper, zinc and mercury concentrations well above the norm. The Clarion Lake area is rivaled only by the creeks draining the Mt. Baldwin-McVicar area and the Britannia mine itself for anomalous values. Empress Creek, which drains the Britannia mine, returned concentrates highly anomalous in copper, zinc, gold, mercury, and lead.

RECOMMENDATIONS

1. Continue to drill test the Slumach stratigraphy horizon along strike southeast as well as to the northwest as far as L2E where earlier work was done. Drill holes should be probed by borehole PEM methods.

2. To extend grid, geologic mapping and sampling toward the southwest to cover postulated Slumach stratigraphy extension within the west limb of the Maggie ridge syncline.

3. A thorough examination of core available from the War Eagle area is now warranted to determine which ,if any of the previous drill holes that adequately test the Slumach horizon.

4. From a base camp at Clarion Lake establish grid control and conduct a humus sampling survey followed by a VLF/Mag and IP surveys. Drill test targets.

5. Further examinations and sampling of the ABC area should be made to assess the potential for a copper-gold porphyry system including the drill testing the intrusive.

TABLE 1: MAGGIE DRILLING SUMMARY

HOLE	LINE	STN.	BEARING	DIP	LENGTH (m)	SIGNIFICANT RESULTS	Cu	Zn	Ag	Au	WIDTH (m)	COMMENT
MM-01	11+00E	1+50S	225	-45	94.8	none						target: Slumach veins
MM-02	10+40E	1+73S	225	-45	55.2	none						target: Slumach veins
MM-03	11+00E	1+83S	225	-45	91.4	none						target: Slumach veins
MM-04	11+50E	1+90S	225	-45	48.5	none						target: Slumach veins
MM-05	12+00E	3+45S	045	-80	143.9	90.10-93.1	37 ppm	1135 ppm	4.9 ppm	15 ppb	3.0	SMS at surface
MM-06	11+00E	3+04S	045	-75	151.5	72.10-73.6	629 ppm	3.60%	4.0 g/t	3.3 g/t	1.5	
						75.10-76.6	2031 ppm	10349 ppm	8.0 g/t	255 ppb	1.5	1.4% Ba
						78.10-79.1	.05%	3.43%	18.1 g/t	0.85 g/t	1.0	
MM-07	9+00E	3+12S	045	-85	195.4	89.60-91.0	115 ppm	5080 ppm	1.6 g/t	5 ppb	1.4	2.3% Ba
						91.0-91.6	.07%	1.63%	12.3 g/t	.02 g/t	0.6	
MM-08	8+33E	3+15S	045	-62	186.8	101.0-102.0	.004%	.14%	9.8 g/t	.21 g/t	1.0	
MM-09	10+00E	3+05S	045	-90	258.2	85.9-87.4	.027%	.30%	6.0 g/t	.06 g/t	1.5	2.49% Ba
						87.4-88.4	178 ppm	3769 ppm	5.7 ppm	145 ppm	1.0	1.75% Ba
						147.4-148.0	.45%	10.80%	13.6 g/t	4.6 g/t	0.6	
MM-10	10+00E	4+87S	045	-78	459.9	423.53-425.03	395 ppm	5020 ppm	4.20 g/t	540 ppb	1.5	
						425.03-425.53	.051%	4.31%	11.80 g/t	0.83 g/t	0.5	
MM-11	11+00E	4+86S	045	-69	409.7	336.91-337.41	.012%	1.52%	.20 g/t	.03 g/t	0.5	
						338.55-339.05	.045%	1.37%	.80 g/t	.02 g/t	0.5	
						339.05-340.55	44 ppm	4136 ppm	.6 g/t	10 ppm	1.5	.31% Ba
MM-12	11+95E	4+96S	049	-71	399.1	273.42-274.02	.038%	2.87%	1.7 g/t	1.02 g/t	0.60	
						274.02-275.42	693 ppm	6146 ppm	1.7 g/t	1000 ppb	1.40	
						284.87-285.87	.284%	4.75%	8.0 g/t	7.39 g/t	1.00	
						296.48-297.48	782 ppm	38,787 ppm	2.3 g/t	45 ppb	1.00	
						299.68-300.18	1994 ppm	30,068 ppm	3.3 g/t	195 ppb	0.50	
						322.25-322.75	.202%	3.72%	3.1 g/t	0.2 g/t	0.50	MS over 2.5 cm
MM-13	13+25E	4+92S	048	-81	334.4	299.84-300.84	169 ppm	1064 ppm	1.8 g/t	50 ppb	1.0	Hole abandoned in Slumach rhyolite
MM-14	7+02E	0+55N	045	-55	220.1	174.75-175.35	2318 ppm	133 ppm	5.2 g/t	35 ppb	0.60	Slumach horizon NE of L8E fault

APPENDIX I

1988 Summary of Work Done

APPENDIX I

1988 Summary

DRILLING	**1823 meters** in five holes	
	lithogeochemical samples	113
	assays	7
	road construction	850 meters
GEOLOGICAL	mapping 5 weeks 1:2000 scale	
	1 week 1:5000 scale	
	lithogeochemical samples	128
GEOPHYSICAL	Borehole pulse EM	
	3 holes all or partially surveyed	
GEOCHEMICAL	27 heavy mineral concentrates	
	two fractions analyzed for 34 elements	

APPENDIX II

Borehole Pulse EM Profiles

Minnova_Inc.

TRANSIENT EM SURVEY

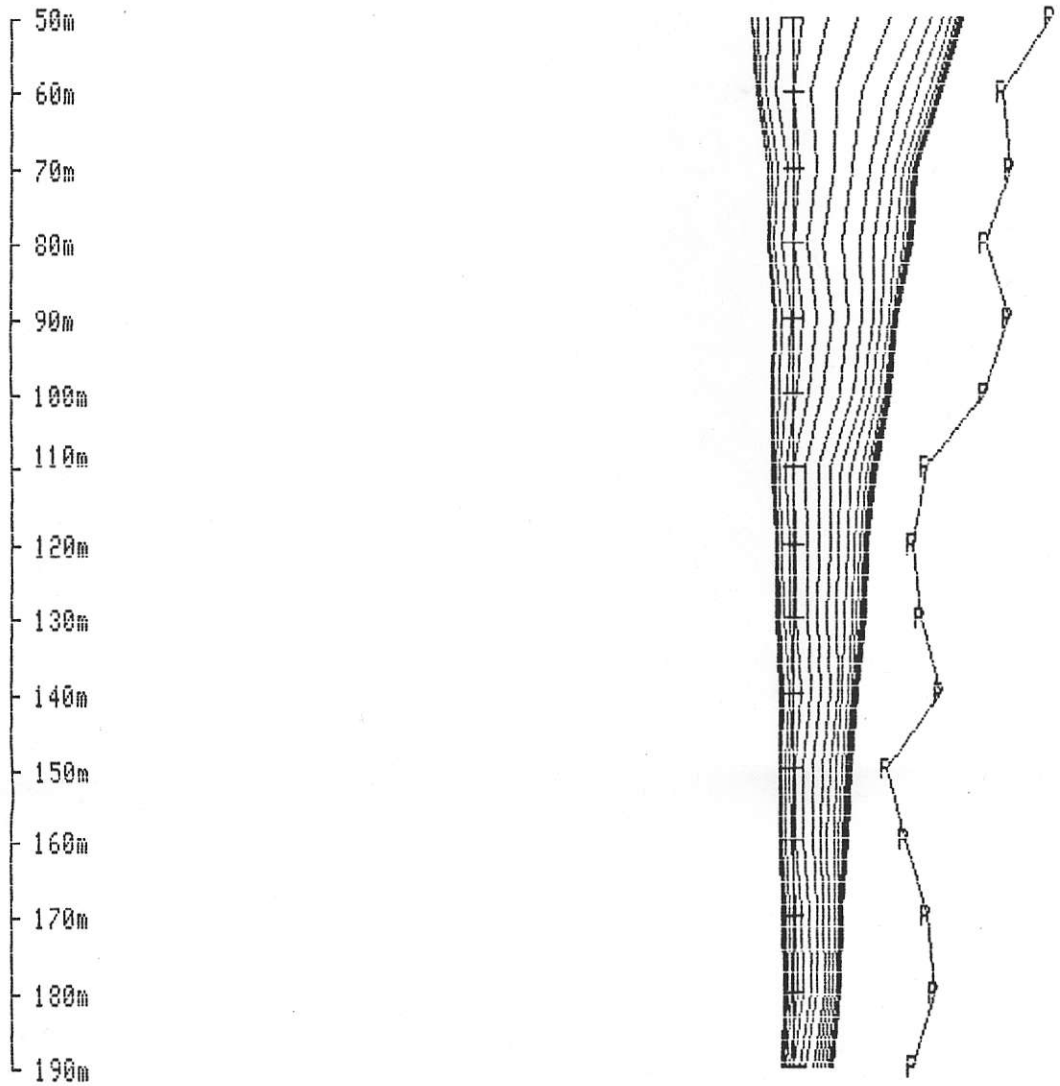
Project:	Maggie_Mine	Tx Loop:	2
Grid:	Maggie_Grid	Current:	12 Amps
System:	Geonics_EM-37	Position:	11E-9E;3S-5S
Hole:	M24	Turn-off:	300 us
Survey mode:	Borehole	Frequency:	30 Hz
Date:	29Oct88	Gain:	6

Surveyed and Processed by QUANTECH CONSULTING INC., Toronto, Canada

Scale: 1:1000

Voltage Scale: lin to 10 then log
channels 1 to 20
nvolts / A-m^2

-10^4 -10^3 -10^2 -10 0 +10 $+10^2$ $+10^3$ $+10^4$



Minnova_Inc.

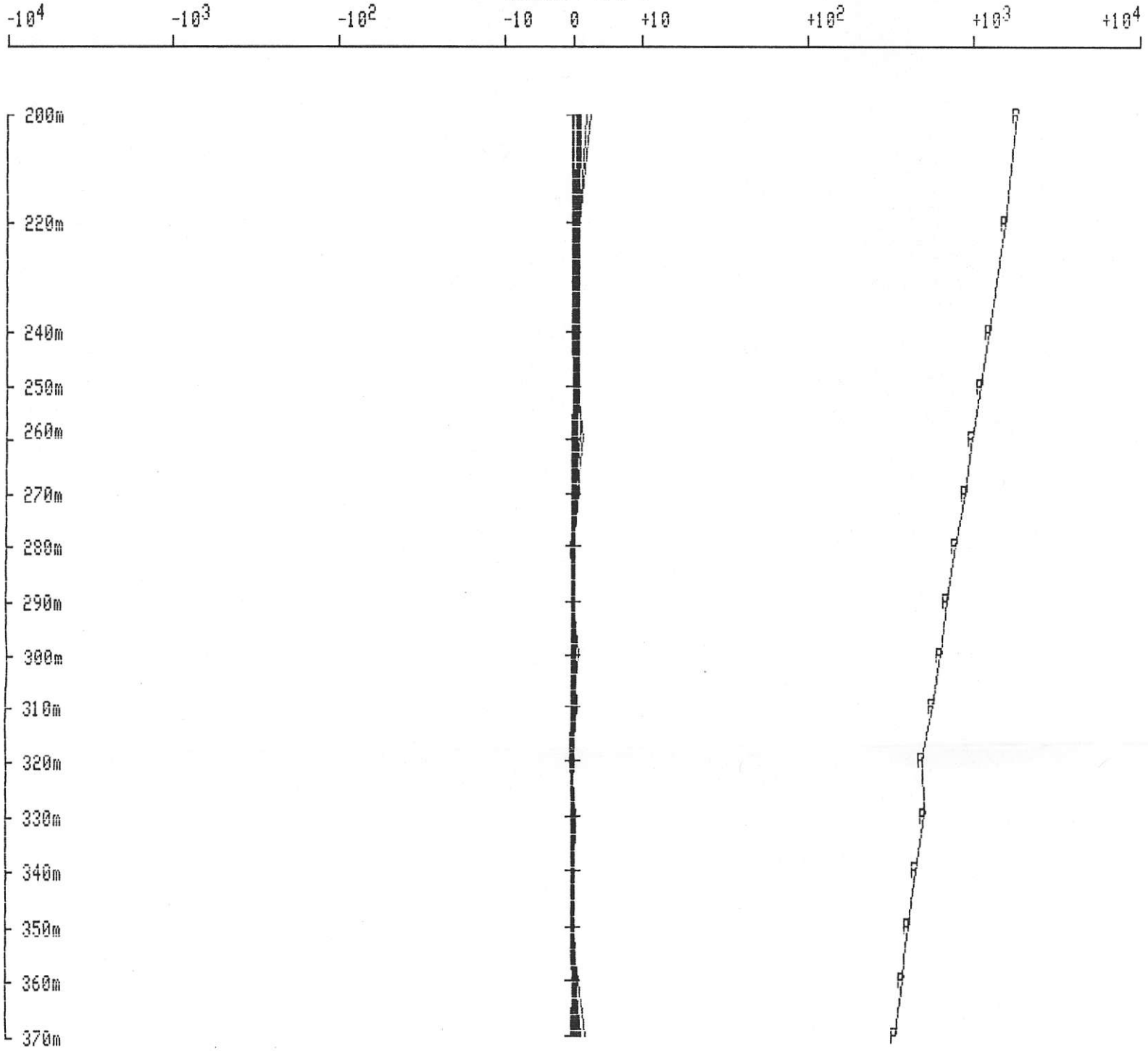
TRANSIENT EM SURVEY

Project:	Maggie_Mine	Tx Loop:	1
Grid:	Maggie_Grid	Current:	14 Amps
System:	Geonics_EM-37	Position:	11E-12E;3S-5S
Hole:	MM12	Turn-off:	300 us
Survey mode:	Borehole	Frequency:	30 Hz
Date:	28Oct88	Gain:	6

Surveyed and Processed by QUANTECH CONSULTING INC., Toronto, Canada

Scale: 1:1000

Voltage Scale: lin to 10 then log
channels 1 to 20
nvolts / A-m^2



Minnova_Inc.

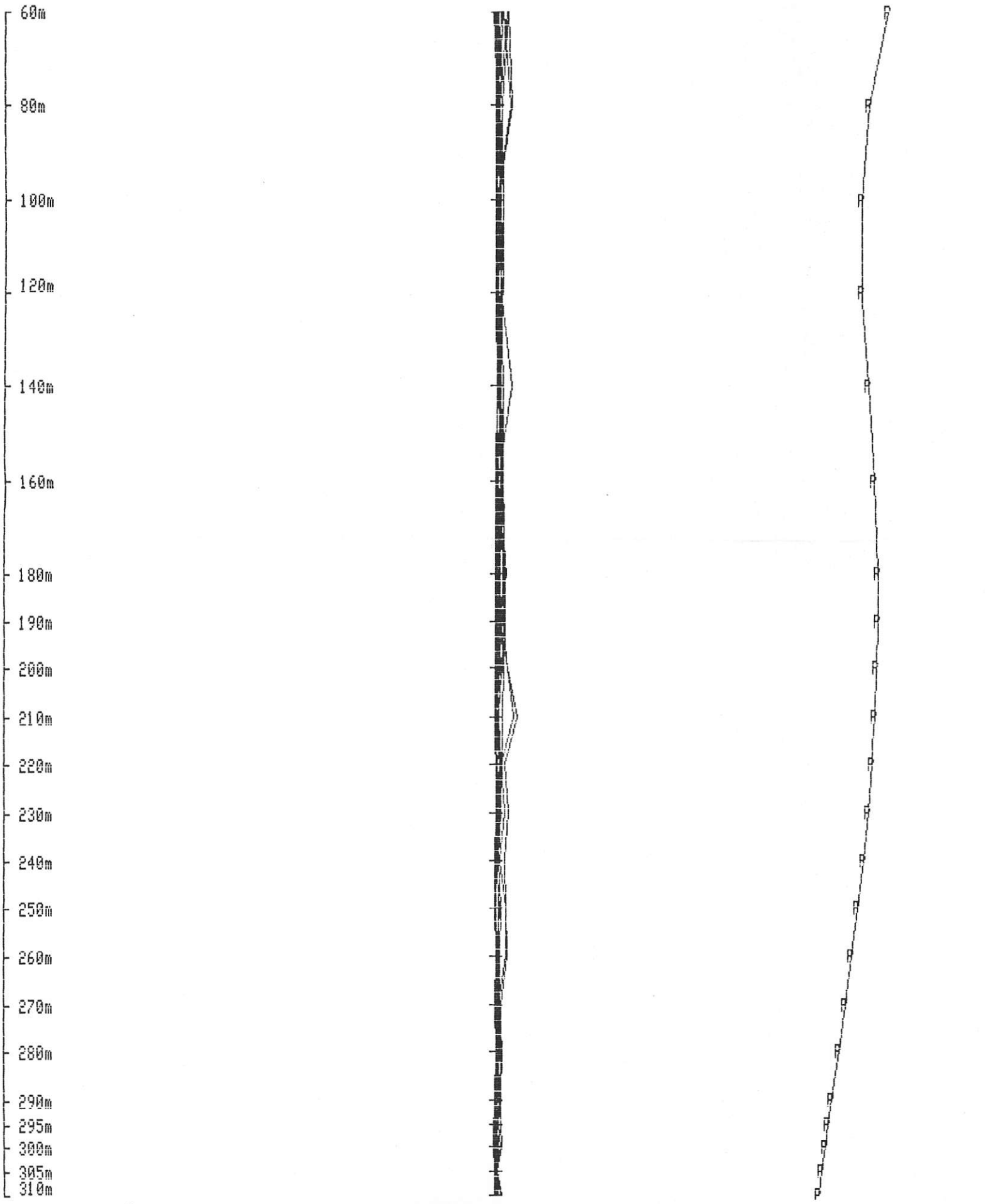
TRANSIENT EM SURVEY

Project:	Maggie_Mine	Tx Loop:	1
Grid:	Maggie_Grid	Current:	14 Amps
System:	Geonics_EM-37	Position:	11E-12E;3S-5S
Hole:	MM11	Turn-off:	300 us
Survey mode:	Borehole	Frequency:	30 Hz
Date:	27Oct88	Gain:	6

Surveyed and Processed by QUANTECH CONSULTING INC., Toronto, Canada

Scale: 1:1000

Voltage Scale: lin to 10 then log
channels 1 to 20
nvolts / A-m^2



APPENDIX III

Drill Logs and Summary Logs

MM-10

PURPOSE: To test stratigraphy 100 metres downdip from MM-09(147.4 to 148.0 10.8% Zn,4.6g/t Au,.45% Cu) for V.M.S. type mineralization

0.0 to 4.27	Casing	
4.27 to 28.0	Basalt	"Ridge Basalt" flowbreccia
28.0 to 41.0	Rhy LT	
41.0 to 60.35	Bas Flbx	
60.35 to 68.50	Rhy LT	
68.50 to 71.63	Bas Flbx	
71.63 to 151.25	Rhy TBx/LT	wk-mod biot
151.25 to 285.77	Epiclastics	mixed ARG/XT/ASH po.,py. smears on cleavage planes occasional po. frags
285.77 to 340.70	Rhy TBx/LT/XT	Slumach hanging wall heterolithic mottled, wk-mod biotite
340.7 to 425.28	Rhy LT	Slumach rhyolite sequence monolithic felsic lithics str-intense cordierite tr. to 1% sph, tr. ga 345.30 - 359.82 SHEAR ZONE locally 10-15% py.
425.28 to 425.53	EXH. HORIZON	***** 10 to 15% sph, 3 to 5% ga ****** honey coloured sph forms matrix of siliceous fragments and clots of milky qtz (remobilized?)
425.53 to 447.80	Dac LT/TBx	biot. flooded matrix siliceous patches
447.80 to 459.94	And	"Mar Andesite" well developed biotite-cordierite hornfels cordierite comparitively small in size at 1mm. frequent wormy silica veinlets 1-2mm.
E.O.H.		

HOLE NUMBER: MM-10

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: MAGGIE
PROJECT NUMBER: 323
CLAIM NUMBER: MAR
LOCATION: Britannia-Squamish

PLOTTING COORDS GRID:
NORTH: 487.00S
EAST: 1000.00E
ELEV: 1187.00

ALTERNATE COORDS GRID:
NORTH: 4+87S
EAST: 10+ 0E
ELEV: 1187.00

COLLAR DIP: -78° 0' 0"
LENGTH OF THE HOLE: 459.94m
START DEPTH: 0.00m
FINAL DEPTH: 459.94m

COLLAR GRID AZIMUTH: ° ' "

COLLAR ASTRONOMIC AZIMUTH: 45° 0' 0"

DATE STARTED: August 21, 1988
DATE COMPLETED: September 15, 1988
DATE LOGGED: August 22, 1988

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

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

CONTRACTOR: Tonto
CASING: 4.27 m
CORE STORAGE: Squamish

PURPOSE: To test stratigraphy 100 m down dip of MM-09 for VMS type mineralization

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.48	-	-77° 0'	ACID	OK	
60.96	-	-77° 0'	ACID	OK	
91.44	-	-77° 0'	ACID	OK	
121.92	-	-77° 0'	ACID	OK	
152.40	-	-74° 0'	ACID		etching vague
152.40	-	-77° 0'	ACID	OK	
213.36	-	-77° 0'	ACID	OK	
274.32	-	-75° 0'	ACID	OK	second attempt
304.80	-	-77° 0'	ACID	OK	
335.28	-	-76° 0'	ACID	OK	
188.06	52° 0'	-76° 0'	TRO-PARI	OK	
380.70	53° 0'	-76° 0'	TRO-PARI	OK	Bottom of NQ
450.80	60°30'	-76° 0'	TRO-PARI	OK	
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Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 4.27	Casing «OB»					
4.27 TO 28.00	«BAS FL»	Colour: light grey, green Grain Size: fine grained and med. grained large lapilli to block size fragments with <1 mm silica filled amygdules. Matrix of chlorite/epidote alt. gran. material Alternately vesicles could be -massive, blocky fracture -fragment supported		-biotite strong within fragments -wk - mod epidote	-nil	-alternatively, vesicles could represent cordierite development
		7.20 FLT 2 cm gouge				
						11.58-14.58 Geochem BCD 15876
		17.68 FLT 1 cm gouge parallel to c.a.				
						20.42 - 23.16 core loss 2.74 m
		Felsic dikes or Tuff beds 23.50 - 24.00 24.40 - 24.60 25.1 - 25.30 25.9 - 26.21				
		Intrusive looking, foliated at dark green, shardy fragments and poss. lapilli stones	50			biotite patches and matrix of chlorite reminiscent of pillows.
		ctc sharp	40			
28.00 TO 41.00	«RHY LT»	Colour: light grey with pinkish tinge, mottled Grain Size: fine grained -massive, siliceous, unit, mottled vague possible felsic lapilli -occasional 1-2 mm vague elliptical siliceous clasts possible cordierites		biot. strong - moderate	nil	-hard brittle blocky fracture, possible felsic dike?
		┤28.28-30.44├«MD» MAFIC DIKE,			nil	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-massive fsp. phyric variety-numerous calcite filled amygdules -well developed chill margins 5 cm. -large 2-3 cm calcite filled amygdules over 10 cm in middle of unit. ctc sharp at	90			35.66 - 38.66 Geochem BCD 15877
41.00 TO 60.35	«BAS FL»	ctc sharp at large patches of porphyritic biotite altered material with matrix or possibly selvages of granular epidote-chlorite-fragment-supported material. ctc lost MAFIC DIKE 52.55-55.05 «MD» Coarse grain feldspar, phyric with carbonate filled amygdules crystal rich. 20 cm, chills fine grained fsp, carbonate throughout -biotite clusters 1 X 2cm at base lower ctc	30 67	str. biot	nil in unit py veinlet < 1 mm at 58.1 nil	New addition to dike family -distinguishable by it coarse, crowded nature.
60.35 TO 68.50	«RHY LT»	Colour: light purplish to grey with white spots Grain Size: fine and medium grained ctc over 400 m at massive, mottled siliceous unit with variable size specks and mottled patches suggest fragmental nature -numerous hairline fractures criss cross unit 67.0-67.45 mafic lapilli 2-3 mm in size with 1 mm siliceous reaction rims ctc 67.45-68.50 speckled white light green unit - massive unit ctc lost	10 30	biotite moderate hornfelsed 65.50-67.0 -silicified 67.45-68.50 intense cordierite development	nil -py clots at 67.0-67.45	-resembles Slumach Rhyolite clastic Rhy TBx 67.45-68.5 BCD15878: geochem

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
68.50 TO 76.65	«BAS FLT»	Colour: dark green Grain Size: fine grained and medium grained as previously described at 4.27 to 28.0 large nebulous (up to 10 cm) patches of porphyritic biotite floded material with epidote-chlorite margins possible selvages		biotite strong	nil	doubtful this is a mafic intrusive because no HCl rx margins lost biotite alteration
71.63 TO 146.60	«RHY LT, TBX»	Colour: lt purplish, grey with Grain Size: coarse to medium grained heterolithic fragment rich, massive to weakly foliated at numerous felsic and mafic lapilli with reaction rims, felsic lithics>> mafic lithics Unit is bedded frequently at siliceous zones 5-10 cm in width, could represent blocks of more felsic material Beddings: at 75.20 at 101.5 Ash bed 5 cm upper ctc ┤78.70-79.3├ «MD» mafic dike carbonate filled amydules drilled margins lower ctc ┤128.94-129.38├ «MD» mafic dike good chills, trace carbon steep ca angles ┤129.76-130.05├ «MD» mafic dike fsp 0 with large 10 cm zenolith of Rhy incorporated 135.4-140.0 Colour: white, orange	40 60 70 70 70 90	mod - str biotite occasional cordierite bearing screens usually 10 cm in thickness	nil at top of unit py clots with sweat\outs similar to rx rims begin appearing around 115.0 m usually c.g. 1x2x3 mm size py bearing frags at 117.1	Note: veinlets selvages display similar alteration as reaction rims surrounding lapilli Unit 60.35 to 68.50 similar but much more difficulty identifying fragments 81.70-84.70 Geochem 15879 114.0-117.0 Geochem 15880

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		irregular contacts - poss fragment margins manganese dendrites have developed at these margins (pyrolusite) 142.34-146.61 Colour: white massive flow(?) ctc sharp at	 50	biotite moderate nil	{135.4-140.0} «tr 1% py» tr 1% py, disseminated in clots clots of sulphide have rusty reaction rims resembling sweat outs tr. py	 137.0-140.0 BCD 15881
146.60 TO 147.90	«AND LT»	Colour: black Grain Size: fine grained vague lapilli - size frags - argillaceous componet especially at upper contact fault at 147.22 minor gouge ctc sharp		strong biotite	py and po smeared out along foliation planes	magnetic component due to pyrrhotite
147.90 TO 151.25	«RHY LT/ TBX»	Colour: white and orange Grain Size: medium grained 135.4-140.0 (resume unit described) -large nebulous frags -lower ctc gradational -fine crystal tuff and chert laminae bedding: at 151.25 m	 70	 mod biot	 tr - 1% py	
151.25 TO 161.55	«EPI/ARG»	Colour: grey Grain Size: fine grained, medium grained -vague streaky black lapilli show pronounced foliation at about -magnetic component -definite epiclastic nature with biotite flooding throughout -occasional quartz veinlets < 1 mm lower ctc gradational	 55 	mod str. biotite	py and po smeared out along foliation planes 159.0 po frag 1x2 cm	 156.36-159.36 BCD 15882 epiclastics

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-magnetic component -definite epiclastic nature with biotite flooding throughout -occasional quartz veinlets < 1 mm lower ctc gradational			159.0 po frag 1x2 cm	156.36-159.36 BCD 15882 epiclastics
161.55 TO 232.85	«EP1»	Colour: Grain Size: dac XT/Ash interbeds -well bedded, medium to fine grained crystals tuffs grade upwards into fine ashes -numerous sequences are represented, separated by what could be occasional flow horizons or more likely felsic blocks top ctc irregular ┤167.20-168.75├ «MD» -carbonate filled amygdules -drill margin lower ctc at ┤171.50-174.65├ «MD» -late variety, olive green -fsp phyric, carbonate fill amygdules 174.30 «FLT» 1 cm gouge 196.3-232.85 Grain Size: medium to coarse grained relatively fresh XT's fine to medium grained with minor ash screens. Crystal-rich massive tuffs, argillite rip-ups ┤203.2-204.3├ «MD»	74 45	strong biotite hornfels preferring certain beds ┤164.60-167.03├ pyrolusite bearing rock moderate to strong biotite	po fragments scattered throughout unit siliceous pyritic fragment at upper ctc ┤177.0-191.11├ «po frags»	mafic - biotite rich beds are magnetic 187.00-190.00 BCD 15883 182.90 Grading, fining uphole bedding @ 75 deg to c.a.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		irregular boundaries fsp phyric epidote + chlorite alteration increasing argillaceous component in ash units downhole irregular rubbly ctc	70		212.04 massive sulphide fragments 5 cm x 1 cm incorporated in argillite fragments or broken beds 1-2 cm thick	210.75-210.90 BCD 15884 1.5 m 228.0-231.0 BCD 15885
232.85 TO 245.95	«BAS FL»	Colour: grey Grain Size: fine grained -massive, faintly fsp phyric -similar to BAS FLOW seen at top of hole, occasion poss. amygdules -numerous chlor/epi veinlets with selvages developed ⌊239.80-241.5⌋ «MD» mafic dike carbonate filled amygdules magnetite bearing good chills 241.5-245.95 -finer grain, homogenous, possibly a massive ash bed. lower ctc irregular parallel to c.a.		strong int. biot	tr 1% po	poss XT or sill troublesome unit
245.95 TO 257.03	«MD»	Colour: dark grey-green Grain Size: fine grained ctc irregular along ca for .5 m		epidote-chlorite veinlets	«po 1-2%» pyrrhotite 1-2% in disseminations and blebs commonly on foliation planes occasional veinlets < 1 mm	 247.0-250.0 BCD 15886 appear to be drilling downdip of unit
				Quartz-po stringer extensive epidote flooding	⌊253.5-254.0⌋ «Qtz-po stringer» Quartz-po stringer 3-5% po.	253.5-254.0 BCD 15887 Trace by Geochem

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
257.03 TO 259.05	«EPI»	Colour: pinkish brown Grain Size: medium grained ctc irregular at feldspar phyric and occasional vague fragments lower ctc	 45 40	strong biotite	po up to 1% restricted to 1-2 mm veinlets	epiclastics
259.05 TO 262.32	«MD»	Colour: dark grey green Grain Size: fine grained predominantly homogenous and massive with few sections faintly fsp.		epi-chlorite mod	po < or = 1% clots & disseminations	BAS FLOW? troublesome unit
262.32 TO 263.10	«EPI»	Colour: purplish and white Grain Size: -well bedded crystal rich beds 3-4 cm thick -feldspar -phyric	 65	-biotite prervasive within matrix	-po frags occuring at lower etc -possible dike margin	-epiclastics
263.10 TO 264.96	«MD»	Colour: dark green Grain Size: fine grained -massive homogeneous -similar to the previous two dikes -ctc sharp at high angle to c.a.		-occasional biotite bearing zones without distinct boundaries	po 1-2% in clots and disseminations often at ctc	
264.96 TO 285.77	«EPI/ARG»	Colour: black spotted Grain Size: fine grained -interbeds of crystal rich tuff beds, with biotite rich matrixes alternate with spotted hornfels -spots are abundant measuring >or= 1 mm -possibly biotite aggregates 270.06 - 273.1 -tuffaceous looking material with strong biotite with strong biotite -numerous qtz po wormy stringers contain		-contact metamorphism of the argillites producing spotted hornfels -biotite stronger in tuff beds str. biot	-py common on foliation planes as platy aggregattes -1-2% fine grained pyrite diss.	epiclastics

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		273.40 - 273.82 -Mafic dike possibly? fsp phyric, poor contact relationships, green, massive 273.1 - 285.77 -argillite -spotted hornfels interbedded with fine grain possible includes ash tuffs. 276.23 - 276.35 -siliceous zone 279.13-279.33 siliceous zone poss large frags? ctc distinct	40	⟨273.1 - 285.77⟩ «i biot» intense biotite -rip ups indicated tops uphole	-3% py in the spotted hornfels -py and limonite on foliation planes 281.51 - 281.64 qtz - po stringer epidote flooded	-Thin Section 279.55
285.77 TO 313.52	«RHY TBx LT, XT»	Colour: purple and white Grain Size: coarse and medium grained -heterolithic predominantly felsic lithics, faintly porphyritic poss. pumice? -fsp phyric -crystal and fragment rich includes ⟨293.45-296.3⟩ «MD» -mafic dike -fsp, phyric variety no carb, lt grey ⟨297.18-299.84⟩ «MD» -mafic dike -massive, fine grained 303.90 -bizarre mottled fragmental, pistachio green -hornfels affects rx rims around frags differently 310.3-310.65 dike runs along core axis		-strong biotite in matrix of unit -occurs in aggregate and clots ⟨290.82-291.16⟩ «mafic dike» mafic dike -massive black good chill margin ctc steep to c.a. ⟨299.31-303.90⟩ «i cord» -well formed cordierites up to 5 mm elliptical shapes	«po 1%» -occasional po frags 287.2 - 287.3 qtz-po stringer, po 1% 292.3 qtz-po stgr -disturbed 3-4 cm thick 299.31-302.31 BCP 15889	Begin Slumach stratigraphy, Slumach rhyolite clastics -similar to MM-09 but more biotite

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
313.52 TO 328.27	«MD»	Colour: green grey Grain Size: fine grained -extremely massive very fine grain rock -occasional vague amygdules -intruded by several late dikes, good chill margins, fsp phyric, carb-filled amygdules ⌊320.35-321.80⌋ «MD» ⌊322.0-322.45⌋ «MD» ⌊324.45-324.75⌋ «MD» contact sharp	30	-moderate biot		-troublesome unit, poss. mafic flow 342-327.0 BCD 15890 -late dikes not taken for sample
328.27 TO 334.00	«RHY TBx, LT»	Colour: purple and white Grain Size: fine and coarse grained -distinctive mottled purple and white -vague possible felsic blocks and lapilli -fsp phyric ⌊327.95-328.4⌋ «MD» -mafic dike -brown porphyritic variety -good chill margin ctc appears parallel to c.a.		wk-mod biot	nil	332.4-333.0 fault? -gougy zone my be just dike contact
334.00 TO 340.70	«MD»	Colour: grey Gain Size: fine grained -massive with vague fsp xtls -also poss. hornblende xtls, retrograding to chlorite -amorphous 334.62-334.82 young mafic dike, good drill margins		-moderate biot	1-2% diss f.g. py	-weak magnetic component

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
340.70 TO 341.83	«CHT, SEDS»	Colour: lt. green and purplish -numerous 1-2 mm elliptical lapilli show crude banding and cordierite concentrations		-str. intense cord	nil	-unit resembles those which gave a clay rich geochem in MM-05
341.83 TO 342.90	«AND»	Colour: lt. grey Grain Size: fine to medium grained -jet black rock matrix completely biotite -numerous faintly blue cordierite spots to a 4-5 mm size		«i. cord»	-nil	-as seen in Slumach rhyolite package MM-09
342.90 TO 348.22	«PY SEDS»	Colour: lt grey Grain Size: fine to medium grained -numerous cordierites and aggregates of biotite give a spotted appearance ┤345.30-345.45├ «FLT» fault -clay gouge ┤345.55-345.60├ «FLT» fault -clay gouge ┤345.18-345.20├ «FLT» fault		-s. cord -limonite stained fractures -biotite forms rosettes	«py < or = 20%» 10-20% py. finely disseminated	-altered, pyritic, exhalite to mud? 342.9-344.4 BCD 15891 344.4-345.90 BCD 15892 345.90-347.4 BCD 15893
348.22 TO 350.55	«MD»	Colour: grey Grain Size: fine and medium grained -massive -fsp 0 and hornblende phyric		-moderate biot -hornblendes altering to chlorite	-tr. to 1% at lower ctc	-magnetic weak component

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
350.55 TO 352.90	«SHEAR ZONE»	Colour: Grain Size: -10 cm muddy gouge followed by 25 cm of intense cordierite altered material -remainder block rubbly zone				
352.90 TO 357.73	«MD»	Colour: grey green Gain Size: fine to medium grained -massive, porphyritic -vague possible feldspars plus occasional hornblende xtls altering to chlorite			< or = 1%	-weak magnetic component 353.0-356.0 .5 m core loss 357.23
357.73 TO 359.82	«SZ»	Colour: Grain Size: -rubble zone of intense cordierite hornfels and dike material				
359.82 TO 425.53	«RHY LT»	Colour: white and grey Grain Size: f.g. to m.g. -massive, densely packed -fragment rich -numerous lapilli 1 cm in size, sub rounded to sub angular -monolithic -rusty foliation planes ⟨377.11-377.88⟩ «MD» -chill margins ⟨384.95-385.88⟩ «MD» -biotite altered, massive		365.0 -cordierite intensities locally, light pale olive green spots, possible retrograde cordierites -1-2 mm size cordierites	-py 1-2% in matrix -tr. gal 364.20-365 -5-10% f.g. diss py and biot ⟨388.0-397.65⟩ «tr 1% sph»	-SLUMACH RHYOLITE -ery blocky ground -recovery problems loss of water -Barite? 372.77 -reduce to BX size 367.60 -cave 372.70 -cave

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-below 394.70, fragments become vague -> increased cordierite content			397.55-397.65 -sph 1-2%, f.g. disseminated	365.46-368.46 BCD 15895
		Bedding 401.42-410.85 «MD» -fsp phyric variety probably drilling down the dip of the dike	50			-below 386.5 units have acquired a faint pinkish hue
		408.43-408.70 Rhy 3-5% py				387.0-390.0 BCD 15896
		408.92-409.15 Rhy LT				397.0-398.5 BCD 15897
					410.85-412.0 -py 7-10% f. g. diss, block gnd	410.85-412.35 BCD 15897
		-Resume main unit m.g. Rhyolite with numerous olive geen spots or patches usully < 3mm in size		-strong intense cordierite	413.5-418.0 -tr 1% sph -tr gal -several vuggy quartz flooded zones usually 2-3 cm in width	413.7-415.20 BCD 15909 416.70-418.20 BCD 15910
		422.80 possible ctc	60			419.03-420.53 BCD 15911
		423.53 fault 5 mm gouge				420.53-422.03 BCD 15912
		-intersection occurs at base of possible flow and sulfides from matrix of a number of milky quartz fragments - Tuffaceous, exhalite		-biotite clusters	425.03-425.53 -5-7% sph, 1-2% gal includes .25 metres 425.28-425.53 -10-12% sph, 3-5% gal	422.03-423.53 BCD 15913 415.20-416.70 BCD 15899
		ctc sharp	40			423.53-425.03 BCD 15900
						425.03-425.53 ASSAY BCD 15901 3% Zn, 1% Pb (estimate)
						425.53-427.53 BCD 15902

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
425.53 TO 431.71	«TBX»	Colour: mottled purple and white Grain Size: c.g. -large siliceous patches with biotite flooding matrix -fragments vague -quartz flooded zone ctc sharp	40	«i biot»	tr. pyrite	BCD 15902
431.71 TO 446.65	«MD»	Colour: grey-green Grain Size: f.g. -massive, homogenous -vague possible amygdales -no HCl rx ctc distinct irreg.			-nil	
446.65 TO 447.80	«RHY TBx»	-as described above 425.53 to 431.71 ctc gradational		«i biot»		
447.80 TO 459.94	«AND»	Colour: lt. brown with blue spots Grain Size: f.g. to m.g. -biotite flooded matrix -densely packed elliptical light blue lapilli cordierites -average size of spots 1 mm 454.76-458.83 -Mafic Dike? -f.g. homogenous biotite altered upper ctc along core axis 1.0 m		-str. -cord -str. -biot	-tr. cp in wormy quartz veinlets 1-2 mm thick	-Mar Andesite 450.80-453.80 BCD 15903
	E. O. H.					

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU g/T	BA %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	AG PPB	AU PPB	BA PPM	AS PPM		COMMENTS
15901	425.03	425.53	0.50	.051	4.31	.60	11.8	.83	.32									

HOLE NUMBER: MM-10 GEOCHEM. SHEET DATE: 27-March-1989

Sample	From (m)	To (m)	Length (m)	AL203 %	BA %	CAO %	FE203 %	K20 %	MGO %	MNO2 %	NA20 %	P205 %	SIO2 %	TIO2 %	S %	TOT %	AG PPM	AS PPM	BA PPM	CU PPM	PB PPM	SB PPB	ZN PPM	AU PPB
15876	11.58	14.85	3.27	17.53	0.037	7.39	9.81	1.25	6.09	0.24	3.13	0.3	47.35	0.97	0.01	94.12	2.6	1	118	42	15	4	54	5
15877	35.66	38.66	3.00	15.28	0.105	1.46	1.52	4.88	0.78	0.05	1.76	0.04	70.27	0.1	0.53	96.78	2.1	16	35	8	14	3	23	5
15878	67.45	68.45	1.00	18.14	0.148	1.1	1.5	6.35	0.83	0.06	1.76	0.08	66.99	0.11	0.03	97.12	2.1	21	68	9	15	2	20	5
15879	81.70	84.70	3.00	12.34	0.117	1.09	1.11	3.32	0.2	0.04	2.62	0.06	76.42	0.08	0.02	97.43	2.2	25	40	18	18	4	24	10
15880	114.00	117.00	3.00	14.74	0.11	0.72	1.4	3.12	0.34	0.06	3.74	0.06	72.97	0.11	0.04	97.41	2	20	44	9	12	3	27	5
15881	137.00	140.00	3.00	14.72	0.109	0.72	1.39	3.08	0.39	0.06	3.79	0.06	72.94	0.11	0.08	97.45	2.3	26	26	15	18	4	27	5
15882	156.36	159.36	3.00	15.94	0.083	1.43	3.27	2.84	1.35	0.07	4.1	0.12	66.63	0.38	0.48	96.7	2.3	42	48	12	14	2	54	5
15883	187.00	190.00	3.00	16.66	0.055	3.21	6.28	1.5	2.26	0.21	4.49	0.21	60.4	0.73	0.18	96.2	2.7	17	139	5	20	1	62	5
15884	209.75	210.90	1.15	15.51	0.027	2.08	3.29	1.48	1.14	0.1	4.67	0.12	67.69	0.36	0.06	96.54	2.4	15	44	6	20	2	48	5
15885	228.00	231.00	3.00	17.4	0.095	2.36	4.45	2.46	1.49	0.13	4.52	0.16	62.78	0.5	0.1	96.47	2.4	9	68	9	19	1	59	5
15886	247.00	250.00	3.00	17.6	0.03	7.68	9.22	0.66	6.07	0.23	3.98	0.29	46.99	0.93	0.18	93.89	2.2	32	141	48	14	4	102	5
15887	253.50	254.00	0.50	13.18	0.049	13.05	12.74	1.19	5.57	0.29	1.54	0.23	43.31	0.7	2.9	94.79	3	52	15	377	18	4	42	1650
15888	279.33	282.33	3.00	17.18	0.064	1.6	5.32	3.63	1.7	0.04	2.1	0.11	62.55	0.52	1.59	96.43	1.9	25	37	40	16	1	62	5
15889	299.31	302.31	3.00	15.87	0.049	1.62	4.33	1.88	2.66	0.09	3.26	0.13	65.45	0.5	0.13	96	2.6	12	140	4	15	1	53	5
15890	324.00	327.00	3.00	17.53	0.012	9.22	9.67	0.18	6.03	0.55	2.04	0.22	46.31	0.96	0.21	92.96	1.4	52	61	51	35	4	65	5
15891	342.90	344.40	1.50	25.07	0.093	0.53	10.29	6.47	1.1	0.05	0.93	0.15	42.87	1.41	7.9	96.88	1.7	15	47	24	24	2	50	5
15892	344.40	345.90	1.50	24.38	0.074	0.19	13.77	6.46	0.53	0	0.28	0.14	33.64	1.4	16.5	97.37	0.8	40	33	11	44	3	20	5
15893	345.90	347.40	1.50	24.1	0.075	0.24	15.72	5.89	0.48	0	0.39	0.09	32.91	1.36	15.85	97.12	0.6	45	36	10	22	1	18	40
15894	353.00	356.00	3.00	17.34	0.028	8.59	9.35	0.37	6.89	0.49	2.28	0.2	46.76	0.85	0.34	93.51	1.1	59	109	39	22	6	41	5
15895	365.46	368.46	3.00	15.76	0.153	0.01	1.96	4.01	3.16	0.11	0.19	0.05	69.75	0.19	0.52	95.89	0.9	15	220	14	23	1	141	5
15896	387.00	390.00	3.00	14.16	0.145	0.08	2.43	3.54	1.25	0.02	0.38	0.06	73.27	0.26	1.14	96.75	1.4	42	103	14	44	1	137	5
15897	397.00	398.50	1.50	17.3	0.177	0.28	4.25	4.28	3.57	0.02	0.6	0.09	61.22	0.32	3.43	95.56	1.6	9	314	38	309	1	791	5
15898	410.85	412.35	1.50	14	0.219	0.29	7.65	2.66	1.91	0.03	1.15	0.07	64.28	0.17	4.2	96.64	1.8	78	241	15	102	3	176	5
15909	413.70	415.20	1.50	13.85	0.149	0.06	1.78	3.79	1.89	0.04	0.24	0.01	73.75	0.16	0.86	96.6	0.8	29	297	14	54	4	147	5
15899	415.20	416.70	1.50	10.03	0.121	0.02	1.32	2.91	0.95	0.01	0.18	0.02	80.5	0.12	0.62	96.8	5	3	117	39	388	4	1291	15
15910	416.70	418.20	1.50	8.92	0.096	0.01	1.55	2.54	1.3	0	0.12	0.02	81.44	0.11	0.72	96.84	4.9	4	223	63	470	1	1327	20
15911	419.03	420.53	1.50	12.68	0.112	0.02	3.37	3.49	2.12	0.11	0.15	0.04	72.62	0.16	1.68	96.56	2.4	32	207	14	109	3	226	15
15912	420.00	422.03	2.03	8.54	0.07	0.01	1.87	2.42	1.33	0.08	0.1	0.01	81.76	0.12	0.69	96.98	4.8	27	136	30	66	3	223	25
15913	422.03	423.53	1.50	13.55	0.117	0.01	2.1	3.75	2.99	0.21	0.13	0.06	72.61	0.18	0.44	96.16	0.4	31	188	14	32	4	189	5
15900	423.53	425.03	1.50	13.88	0.198	0.15	2.33	4.15	2.39	0.01	0.4	0.03	70.9	0.24	0.98	95.67	4.2	1	231	395	634	1	5020	540
15902	425.53	427.03	1.50	10.48	0.265	0.33	2.73	3.49	1.67	0.03	0.98	0.04	75.32	0.24	0.74	96.32	1	6	147	127	176	1	3169	25
15903	450.80	453.80	3.00	14.59	0.048	0.83	5.8	1.45	2.83	0.66	2.92	0.17	65.64	0.65	0.31	95.89	0.3	1	192	37	12	3	136	10

MM-88-11

PURPOSE: To test stratigraphy 100 metres downdip from MM-06 for V.M.S. type mineralization

0.0 - 3.97	CASING	
3.97 - 71.25	EPICLASTICS	
71.25 - 140.10	RHYOLITE TUFF-BRECCIA, heterolithic, numerous Ridge Basalt dikes	
140.10 - 171.00	EPICLASTICS	
171.00 - 215.49	ARGILLITE	
215.49 - 229.20	EPICLASTICS	
229.20 - 306.77	RHYOLITE CLASTICS	-Slumach hanging wall, heterolithic -local cordierite alteration
306.77 - 345.20	SLUMACH RHYOLITE	-monolithic felsic lithics, str. cordierite, tr. sph includes: 306.77-312.07 Andesite 312.07-316.03 Pyritic sediment locally 20-30% py, faults 336.91-337.41 2-3% sph. + quartz 338.55-339.05 3% sph.,tr-1% ga. quartz stringer
345.20 - 409.65	MAR ANDESITE	-well developed biotite - cordierite hflse 365.20-409.65 giant spots >1cm. cords. wormy silica veinlets

E.O.H.

HOLE NUMBER: MM-11

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: MAGGIE
PROJECT NUMBER: 323
CLAIM NUMBER: MAR
LOCATION: Britannia-Squamish

PLOTTING COORDS GRID: MAGGIE
NORTH: 486.00S
EAST: 1100.00E
ELEV: 1195.00

ALTERNATE COORDS GRID: MAGGIE
NORTH: 4+86S
EAST: 11+ 0E
ELEV: 1195.00

COLLAR DIP: -69° 0' 0"
LENGTH OF THE HOLE: 409.65m
START DEPTH: 0.00m
FINAL DEPTH: 409.65m

COLLAR GRID AZIMUTH: ° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 45° 0' 0"

DATE STARTED: September 16, 1988
DATE COMPLETED: October 14, 1988
DATE LOGGED: October 14, 1988

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

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

CONTRACTOR: Tonto
CASING: 3.97 m
CORE STORAGE: Triton, Squamish

PURPOSE: To intersect a VMS deposit 100 m downdip of MM-06

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
28.65	-	-69° 0'	ACID	OK	
65.53	-	-68° 0'	ACID	OK	
93.57	-	-69° 0'	ACID	OK	
121.92	-	-69° 0'	ACID	OK	
154.53	-	-68° 0'	ACID	OK	
182.88	-	-68° 0'	ACID	OK	
245.96	-	-67° 0'	ACID	OK	
274.32	-	-67° 0'	ACID	OK	
306.63	-	-66° 0'	ACID	OK	
198.12	63° 0'	-70° 0'	TRO-PARI		-test in magnetic unit
402.03	51° 0'	-68° 0'	TRO-PARI	OK	

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 3.97	«OB»					
3.97 TO 29.50	«EPI/ARG»	Colour: lt brown to black Grain Size: f.g. to m.g. -alternating beds of argillite/and epiclastic crystal - lapilli tuff -Epiclastics resemble biotite -cordierite foot wall hornfelses in appearance -argillites have a graphitic component ctc irregular		-moderate biotite flooding matrix of	-po smeared on foliation planes	14.33-17.33 BCD 15904 -occasional rhyolite screens may represent blocks
29.50 TO 34.80	«DAC LT»	-densely packed siliceous clasts completely		-appears silicified 29.5-34.8 i. silica	-tr. gal or is it specularite?	32.02-33.52 BCD 15905
34.80 TO 65.96	«DAC TBx, LT, XT»	-numerous siliceous patches -possible fragments intercalated by fsp O crystal tuff and LT hornfelsed XT beds ⎩54.30-55.0⎭ «MD» 42.67-45.05 -Mafic Dike fsp phyric chaotic arrangement of fsp crystals -lower margin epi altered chill 41.65 flt 58.22-58.42 -screens of well bedded hornfelsed material @ ⎩59.1-61.5⎭ «MD» amydules HCl rx	80 75	-biotite flooding str. biot.	37.0-38.2 po fragments	-troublesome unit siliceous patches may represent blocks within a fine grain tuff sequence -hornfelsing quite strong 46.0-49.0 BCD 15906

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		ctc lost				
65.96 TO 71.25	«MD»	fsp phyric numerous chaotically arranged fsp occur with 1-2 mm elliptical silica-filled amygdules ctc lost		-epidotized vein selvages -strong biotite	nil	-possible sill or flow 66.0-69.0 BCD 15907
71.25 TO 72.40	«DAC LT»	-mottled felsic unit with numerous hairline fractures			nil	
72.40 TO 75.82	«MD»	Colour: brown Grain Size: f. g. and m. g. -vague fspar phencrysts occur locally as well as <= 1mm round silica filled amygdules ctc sharp	90	-biotite mod - st. epidote altered vein selvages	nil	-possible sill or flow
75.82 TO 77.50	«MD»	Colour: light grey Grain Size: c. g. -feldspar phyric -possible amygdules -f.g. chill margins, olive green ctc sharp	88	-nil	-nil	-young mafic dike
77.50 TO 81.55	«RHY LT»	Colour: Grain Size: m. g. -numerous vague lapilli some biotite altered probably represent mafic lapilli <<<10% -frags seem to have rx rims. ctc distinct	50	-nil	-nil	-none

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
81.55 TO 90.91	«MD»	Colour: lt. brown to lt. green Grain Size: f. g. to m. g. -variable size, lt. blue to green patches occur within a matrix of f.g. biotite ctc irregular		-mod st. biot		-possible sill or flow 87.0-90.9 BCD 15908
90.91 TO 96.22	RHY TBx Lt	Colour: purple and grey mottles Grain Size: f. g. to m. g. -occasional vague patches larger than 6 cm which constitute breccia size -rx rims around lapilli ┤91.0-91.5├ «MD» -mafic dike -black distinct chill margins ctc sharp	30	-nil	-nil	-numerous fractures with sileceous selvages criss-cross core. -lower part of unit has two narrow dikes (?) cutting through at a high angle to the c.a. 95.4
96.22 TO 100.50	«MD»	-as previously described 81.55 to 90.9 ctc broken		-biotite moderate		
100.50 TO 103.67	RHY TBx	-as previously described ctc lost				
103.67 TO 105.08	«MD»	-as previously described ctc irregular				
105.08 TO 105.53	RHY TBx	-as previously described ctc irregular				
105.53 TO 106.02	«MD»	Colour: brown Grain Size: f. g. -as previously described ctc	90			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
106.02 TO 119.25	«RHY Lt/TBx»	Colour: mottled white orange grey Grain Size: -numerous felsic lithics present as cloudy milky shapes -shapes seem to have reaction rims -heterolithic ctc sharp	40	-hornfelsed, silicified	-occasional sulphide fragments -distinctive due to rusty sweat outs	-magnetite, 1% f. g. disseminated -pyrolusite 114.60-117.60 BCD 15914
119.25 TO 130.90	«MD»	Colour: Grain Size: -massive -homogenous -faintly fsp 0 134.2-134.6 dike -ctc running along core axis ctc sharp irregular		-mod biot	125.3 tr. cp	125.1-125.6 BCD15915
130.90 TO 136.25	«RHY LT»	Colour: Grain Size: -hornfelsed -mostly rhyolite as described above 106.02-119.25 -occasional sections of dike material 134.2-134.6 dike -ctc running along core axis		-nil	-nil	blocky gnd
136.25 TO 140.10	«MD»	Colour: grey green Grain Size: -faintly fsp (?) phyric randomly oriented phenocrysts -massive				«mgte» -magnetite bearing -145.3-148.3 BCD 15916

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
140.10 TO 148.30	«EPI»	Colour: lt grey Grain Size: f. g. to m. g. -crystal rich tuffs often feldspar and occasional felsic lithics interbedded with finer grain material bedding ctc lost	 40	-pyrolusite develops near fractures	-tr. 1% po	-magnetite bearing 145.3-148.3 BCD 15916
148.30 TO 168.23	«MD»	Colour: grey green Grain Size: -faintly fsp phyric intruded by young ⌊149.21-150.0⌋ «Mafic Dike» Mafic dike ⌊150.45-150.90⌋ «Rhy screens» ⌊164.58-164.99⌋m «Rhy screens» ⌊166.11-166.12⌋ «FLT» -10 cm clay gouge -amygdules noted in lower part of units 1-2 mm silica filled ctc sharp	 60	-w. biot -epi alteration around	tr. po 160.5 -po stgr 1-2 mm	-possible mafic flow or sill 158.80-161.8 BCD 15917
168.23 TO 171.00	«EPI»	Colour: lt. grey to lt. red brown Grain Size: f. g. to m. g. -xt and tuffaceous screens mixed with argillite -arg massive black ⌊169.0-169.95⌋ «ARG» ctc irregular		-biot mod in some tuff screens	-tr. po	-rip ups indicate tops downhole

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
171.00 TO 215.49	«ARG»	Colour: black Grain Size: f. g. -massive -occasional carbonate veinlets -very faint black spots -spotted hornfels {176.14-176.62} «ID» -intermediate X-rich dike seds chilled on either side of dike {186.0-186.65} «CHTY ASH» 1-2% f. g. py 187.76-188.75 -XT faintly fsp phyric 195.22-197.4 felsic ash? 2-3% py {197.4-199.07} «MD» -epidote altered dike(?) appears to intrude epiclastic volcanic conglomerate bed -multilithic, poorly sorted {202.6-205.75} «RHY» -Rhy hornfelsed felsic tuff 1-2% f.g. py -cordierite developed locally contacts irregular -f.g. narrow epidote bearing units possibly dikes cross cut stratigraphy at a low angle -numerous xenoliths -look like welded tuffs? small scale faults ctc gradational		206.04 -carbonate veinlets < 1 mm	-po 1-3% very f.g. disseminated -occasional clots of po up to 2-3 cm size 191.5 3% py f.g. diss. -po - qtz vein -1% po	180.5-181.0 BCD 15918 186.0-186.7 BCD 15919 204.25-205.75 BCD 15920
215.49 TO 229.20	«EPI»	Colour: marbled purple and white Grain Size: f. g. and m. g. -hornfelsed thin and medium body on epiclastic material -same section spotted				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-limonite stains with pyrolusite -well bedded at -some cherty sections -biotite forms thin beds {216.50-220.05} «MD» -Mafic Dike -phenocryst rich euhedral fsp ctc gradational	55			224.02-227.08 BCD 15921
229.20 TO 248.05	«RHY BLT»	Colour: Grain Size: -interbeds of above unit near top -fragment rich -felsic lithics dominate -biotite developed within matrix -appears banded in places ctc sharp	30	-occasional cordierite screen 5 cm	-several sulphide sweat outs -possible fragments -1-2 cm in size occur around 247 m	-TOP OF SLUMACH RHYOLITE SEQUENCE 244.80-247.80 BCD 15922
248.05 TO 259.60	«MD»	Colour: grey green Grain Size: f. g. -massive -homogenous -faintly porphyritic lower ctc lost	30	-epidote -accompanies veins	-magnetite veinlets < 1 cm sometimes running along core axis	mafic sill / flow type
259.60 TO 306.77	«RHY TBx»	Colour: mottled purple and light green Grain Size: f. g. and c. g. -resume previous unit -siliceous patches, corderite altered zones resemble large fragments -siliceous patches as likely altered felsic fragments {273.62-274.34} «MD» Mafic Dike - massive		-w. cord -biot moderate to weak -talc(?) on foliation planes	-nil	262.4, 263.4 -occurences of bright pink mineral within quartz-rich zones 278.28-281.28 BCD 15923

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		280.33 -5 cm vuggy qtz vein -barren 291.04 -carbonate vein barren, vuggy ⟊293.79-294.75⟋ «MD» -Mafic Dike -HCl rx, faintly porphyritic ctc distinct at	65	below 290 m less biotite 298.1-298.4 -carbonate veinlets <= 1 mm		300.84-303.84 BCD 15924
306.77 TO 312.07	«AND»	Colour: purple and grey Grain Size: m. g. -numerous 1 mm retrograded cordierites elliptical in shaper within a biotite altered matrix		«str. bi-co» -str. biot-cord hornfels -large up to 1 cm cords with biot mantling around 310.59-311.52	-1% v. f. g. diss py	-some rip-ups of this unit in overlying Rhy TBx -appears to be similar to altered sediments
312.07 TO 316.03	«PY SEDS»	Colour: grey Grain Size: fine to medium grained -pyritic fine grain rock with occasional felsic clasts ⟊311.70⟋ «FLT» flt -gouge 1 cm 316.30 flt		-clay gouge common on foliation planes	«py 20-30%» -20-30% f.g. py disseminated	312.07-313.57 BCD 15925 313.57-315.07 BCD 15951 -probably correlates with faulted pyritic muds up dip in MM-06
316.03 TO 345.20	«RHY LT»	Colour: white Grain Size: medium grained ⟊317.60-317.80⟋ «SZ» flt, coreloss: 20 cm, 4 cm gouge		-cordierite developed mod-str. ⟊316.03-340.25⟋ «str. cord»	-2% py tr. sph.	317.60 -reduce to BX -loss of water

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		318.21 flt, gouge 4 cm -vague siliceous fragments			{320.0-343.80} «1-3% sph»	318.52 -stuck for 7 days, pump TAX and G-stop downhole to try and seal fractures (plus 14 bags of cement) Hole losing of H20
				320.2-320.6 -silica flooded	320.2-320.6 -1% sph	
		{324.66-324.90} «CHT» Chert			324.90-327.36 -1% sph	
		bedding ctc	40			Slumach Rhyolite 326.14-329.14 BCD 15952
		-Rhyolite has developed olive green spots <= 1 mm occasional angular felsic lithics -preferred orientation of fragments			-py developed in matrix of frags locally	328.12-332.40 -blocky and ground up core -disasterous
			50			335.41-336.91 BCD 15957
					336.91-337.41 -2-3% sph in matrix of felsic fragments -some qtz -lt. brown sph.	336.91-337.41 BCD 15953 .5-1% Zn/.5 m Assay
		{337.41-337.52} «MD» -Mafic Dike - v.f.g., black, HCl rx				337.41-338.55 BCD 15954
					338.55-339.05 -3% sph, tr. 1% ga, Barite? -sugary looking white material + qtz -lt. brown sph -looks like a stringer	338.55-39.05 BCD 15955 1-2% Zn, Ba? /.5 m Assay
				{340.25-343.80} «i. biot» -intenser biot similar to rhy flooded with biotite seen in MM-12	340.25-342.8 -tr. 1% sph disseminated	339.05-340.55 BCD 15956
		{342.83-343.13} «Mafic Dike» -Mafic dike HCl rx				340.55-342.05 BCD 15958
					344.12-345.20 -heavy limonite stain on fracture	342.05-342.83 BCD 15959
						-peculiar biotite flooded rock accompanies mineralization. Looks like granite when broken
		-345.20-345.34				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		contact gradational and broken				
345.20 TO 409.65	«AND»	Colour: brown with pale blue spots Grain Size: f.g. and m.g. 345.20-345.6 -transition to footwall biotite -cordierite hornfels ⟨347.12-353.10⟩ «MD» Mafic dike -sill flow type ⟨348.43-350.5⟩ «MD» Mafic dike -good chills ⟨353.10⟩ «FLT» 2 cm gouge, numerous wormy silica veinlets and clots up to 1 cm in size 353.10-356.80 -more int - mafic chem 374.18-375.75 -siliceous zone 5-7% py, f.g., disseminated 378.85-379.55 -siliceous zone 3-5% py as above -qtz stgr (milky) ⟨404.90⟩ «FLT»		«str.-i bi-co» -str. cordierite -str. int. biotite 365.20-409.655 -giant spots, cordierite often 1 cm in size with rosettes of biotite mantling 386.55-388.25 -lt. green poss epi -can still see cordierites but vague	-tr. 2% py 359.45 -3-4 cm qtz str, cp 1-2% 398.70-398.97 -tr. 1% cp diss	-Mar Andesite 358.30-361.30 BCD 15960 398.50-401.50 BCD 15961
	E. O. H.	flt, 2 cm gouge				

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU g/T	BA %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	AG PPB	AU PPB	BA PPM	AS PPM		COMMENTS
15953	336.91	337.41	0.50	.012	1.52	.01	.20	.03	.29									
15955	338.55	339.05	0.50	.045	1.37	.01	.80	.04	.12									

Sample	From (m)	To (m)	Length (m)	AL2O3 %	BA %	CAO %	FE2O3 %	K2O %	MGO %	MNO2 %	NA2O %	P2O5 %	SIO2 %	TIO2 %	S %	TOT %	AG PPM	AS PPM	BA PPM	CU PPM	PB PPM	SB PPB	ZN PPM	AU PPB
15904	14.33	17.33	3.00	15.73	0.048	3.96	6.88	1.31	3.28	0.46	3.67	0.14	58.76	0.67	0.53	95.46	1.3	29	237	63	37	3	153	5
15905	32.02	33.52	1.50	13.36	0.05	9.58	6.85	1.15	1.81	1.59	3.67	0.08	57.6	0.4	0.15	96.31	1.5	18	23	27	23	4	194	5
15906	46.00	49.00	3.00	15	0.073	1.9	3.95	1.96	1.63	0.28	4.44	0.05	66.57	0.5	0.03	96.41	1	18	165	6	20	2	68	10
15907	66.00	69.00	3.00	18.29	0.029	8.97	9.03	1.46	4.42	0.81	2.88	0.2	45.51	0.99	0.39	93.01	1.1	18	195	63	37	2	103	5
15908	87.00	90.00	3.00	16.43	0.041	9.14	9.47	1.7	6.61	0.83	2.17	0.22	44.08	0.91	0.12	91.75	0.7	15	340	84	33	3	78	5
15914	114.60	117.60	3.00	13.53	0.212	0.67	1.17	5.09	0.58	0.09	2.52	0.03	73.33	0.09	0.09	97.41	0.3	25	65	10	11	3	24	5
15915	125.10	125.60	0.50	16.65	0.054	8.5	9.54	1.75	7.02	0.74	2.25	0.2	44.97	0.83	0.11	92.65	0.9	31	272	58	26	4	75	10
15916	145.30	148.30	3.00	16.14	0.01	1.78	3.82	0.3	1.64	0.22	6.71	0.11	65.08	0.44	0.46	96.73	0.9	23	19	32	12	3	20	5
15917	158.80	161.80	3.00	15.88	0.062	6.14	8.6	0.7	5.1	0.51	3.08	0.23	53.23	0.79	0.65	95.01	0.5	75	192	46	22	4	44	5
15918	180.50	181.00	0.50	16.55	0.041	3.34	4.48	2.26	1.69	0.08	2.2	0.15	63.3	0.57	1.45	96.15	1.1	52	68	28	51	5	126	20
15919	186.00	186.70	0.70	18.98	0.062	1.79	4.15	3.67	1.97	0.1	1.81	0.11	62.33	0.41	1.1	96.5	0.5	26	53	17	26	2	48	120
15920	204.50	205.75	1.25	16.28	0.063	1.81	3.56	3.55	1.49	0.12	1.13	0.18	66.8	0.32	1.13	96.45	0.5	12	52	24	29	1	86	5
15921	224.02	227.02	3.00	16.22	0.056	1.36	2.13	1.68	0.67	0.13	5.01	0.11	69.38	0.31	0.18	97.27	0.5	8	29	7	17	1	32	5
15922	244.80	247.80	3.00	16.75	0.062	1.27	3.35	2.11	1.79	0.13	3.27	0.14	67.1	0.5	0.07	96.58	0.5	17	72	7	14	1	51	5
15923	278.28	281.28	3.00	15.89	0.118	2.55	2.08	2.45	3.5	0.16	1.87	0.08	66.07	0.19	0.02	95.01	1.1	27	124	6	19	4	50	15
15924	300.84	303.84	3.00	13.74	0.102	1.12	1.74	1.66	1.98	0.1	2.65	0.03	72.66	0.17	0.39	96.36	1.1	86	188	12	18	1	41	5
15925	312.07	313.57	1.50	30.65	0.128	0.12	9.37	5.76	0.21	0	0.87	0.12	40.76	2.03	7.5	97.57	0.7	1	108	18	32	1	107	5
15951	313.57	315.07	1.50	29.79	0.138	0.26	8.23	6.25	0.19	0	0.78	0.19	41.91	1.85	7.95	97.57	0.6	1	154	7	26	1	71	5
15952	326.14	329.14	3.00	19.73	0.277	0.09	6.1	4.95	2.66	0.13	0.24	0.1	58.22	0.49	3.65	96.65	2.1	86	400	181	87	3	276	40
15957	335.41	336.91	1.50	12.12	0.217	0.66	2.86	3.4	3.1	0.27	0.15	0.11	71.52	0.24	0.41	95.05	0.8	21	319	8	35	3	1650	5
15954	337.41	338.55	1.14	13.34	0.214	0.83	3.6	3.67	2.83	0.18	0.53	0.11	68.72	0.36	0.18	94.58	0.8	29	322	22	34	3	956	15
15956	339.05	340.55	1.50	12.28	0.307	0.28	2.69	4.48	2.06	0.11	0.23	0.08	71.84	0.24	0.75	95.36	0.6	5	290	44	52	1	4136	10
15958	340.55	342.05	1.50	12.36	0.293	0.26	2.63	4.47	2.3	0.12	0.22	0.07	68.8	0.24	0.54	92.3	0.5	9	276	9	40	1	4232	5
15959	342.05	342.83	0.78	11.27	0.313	0.65	2.27	4.05	2.01	0.09	0.31	0.07	73.54	0.22	0.47	95.28	0.9	1	299	59	39	3	3232	5
15960	358.30	361.30	3.00	17.45	0.218	0.43	7.46	7.31	3.96	0.44	0.55	0.23	54.84	0.77	1.24	94.9	1.9	52	185	12	35	12	211	5
15961	398.50	401.50	3.00	17.1	0.196	0.53	6.83	6.25	4.62	0.41	1.09	0.23	57.18	0.74	0.16	95.35	1.9	52	185	28	36	10	217	5

MM-88-12

PURPOSE: To test stratigraphy 100 metres downdip from MM-05 for V.M.S. type mineralization.

0.0 - 2.45	CASING		
2.45 - 99.00	EPICLASTICS		
99.00 - 128.30	EPICLASTICS / ARGILLITE transition		
128.30 - 203.30	ARGILLITE		
203.30 - 214.05	EPICLASTICS strong cordierite - biotite hornfels		
214.05 - 251.91	RHYOLITE CLASTICS -Slumach hangingwall -local cordierite screens -heterolithic		
251.91 - 333.00	SLUMACH RHYOLITE -monolithic -strong to intense cordierite includes:		
		252.22-254.81	10-15% py
		256.36-257.70	FLT ZONE
		273.50-333.00	1-2% sph.
		273.42-274.02	Qtz-sph, stringer, 3% sph.
		281.57-283.33	Qtz-sph-cp stringer, 2-3% sph, tr-1% cp
		284.87-285.57	Qtz-sph stringer, 3-5% sph, tr-1% cp, tr-1% ga
		299.68-300.18	Qtz-sph stringer, 2-3% sph.
		322.60-322.62	Massive sphalerite (2.5 cm.)
333.00 - 339.43	MAFIC DIKE		
339.43 - 399.14	MAR ANDESITE -strong biotite - cordierite hornfels		

E.O.H

HOLE NUMBER: MM-12

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: MAGGIE
PROJECT NUMBER: 323
CLAIM NUMBER: MAR
LOCATION: Britannia-Squamish

PLOTTING COORDS GRID: Maggie
NORTH: 496.00S
EAST: 1195.00E
ELEV: 1182.00

ALTERNATE COORDS GRID: Maggie
NORTH: 4+96S
EAST: 11+95E
ELEV: 1182.00

COLLAR DIP: -71° 0' 0"
LENGTH OF THE HOLE: 399.14m
START DEPTH: 0.00m
FINAL DEPTH: 399.14m

COLLAR GRID AZIMUTH: 4° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 49° 0' 0"

DATE STARTED: September 22, 1988
DATE COMPLETED: October 27, 1988
DATE LOGGED: 0, 0

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

PULSE EM SURVEY: YES
PLUGGED: NO
HOLE SIZE: NX,BX

CONTRACTOR: Tonto
CASING: 2.45
CORE STORAGE: Triton, Squamish

PURPOSE: To hit ore 100 m downdip of MM-05

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.48	-	-69° 0'	ACID	OK	
60.96	-	-70° 0'	ACID	OK	
93.27	-	-69° 0'	ACID	OK	
121.92	-	-69° 0'	ACID	OK	
152.40	-	-68° 0'	ACID	OK	
182.90	-	-68° 0'	ACID	OK	
213.40	-	-68° 0'	ACID	OK	
243.84	-	-67° 0'	ACID		can't read
274.32	-	-68° 0'	ACID	OK	
304.80	-	-68° 0'	ACID	OK	
214.27	50° 0'	-69° 0'	TRO-PARI	OK	
396.09	56°30'	-65° 0'	TRO-PARI	OK	
-	-	-	-	-	
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Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 2.45	«OB»					
2.45 TO 42.25	«EPI» EPICLASTIC	Colour: lt. grey Grain Size: f. g. to m. g. -strongly hornfelsed -biotite up to 40% -medium grained well-sorted XT interbedded with f.g. mottled purple rock with siliceous patches -no evidence of chill margins -contain euhedral fsp laths as well as occasional felsic lithics ⟨5.9-6.55⟩ «MD» -olive green fsp porphyritic -mafic dike ⟨22.2-22.25⟩ «FLT Bx» -fault breccia -below 24.0, occasional lapilli stone size fragments well bedded @ ctc sharp @	50 30	-nil	-nil	-magnetite bearing, medium grain, well sorted section closely resembles diorite-looking rock at top of unit 19.5 thin section -below 24 meter, epiclastic nature evident 24.0-27.0 BCD 15926
42.25 TO 44.50	«MD» MAFIC DIKE	Colour: dark green Grain Size: f. g. -vaguely fsp 0 and epidote veins				
44.50 TO 46.65	«RHY» RHYOLITE	Colour: mottled purple Grain Size: f. g. and m. g. -wandering siliceous veins and patches ctc sharp	25			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
46.65 TO 48.00	«MD» MAFIC DIKE	Colour: black Grain Size: f. g. -massive -epidote f. g. veins end at ctc				
48.00 TO 49.05	«EPI» EPICLASTICS	Colour: purple Grain Size: m. g. -bedded with lapilli stone -definitely epiclastic ctc sharp	65 40			
49.05 TO 49.67	«MD» MAFIC DIKE	Colour: black Grain Size: f. g. -as previously described				
49.67 TO 58.65	«EPI» EPICLASTICS	Colour: lt. purple Grain Size: f. g. to m. g. -biotite commonly in matrix -siliceous zones -blocky ctc irregular				-pyrolusite dendrites on siliceous zones 50.75-53.75 BCD 15927
58.65 TO 79.35	«MD» MAFIC DIKE	Colour: lt grey green Grain Size: -ctc show bleaching which could represent chills -biotite altered -faintly fsp hyric {68.65-69.1} «YMD» young, olive green mafic dike {71.82-72.2} «YMD»		-biotite more prevalent in some zones than others		-magnetite bearing 75.90-78.9 BCD 15928

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
79.35 TO 99.00	«EPI» EPICLASTICS	Colour: grey Grain Size: f. g. to m. g. -well bedded at mixed fine grain banded seds with coarser lapilli stone size screens -strong biotite hornfels dominate matrix ⎨83.05-84.9⎬ «MD» -fsp porphyritic, good chilled contacts 87.30-87.55 -XT -fsp phyric - crowded with phenocrysts or clasts irregular ctc no chills 90.5-92.3 -originally a felsic ash pyrolusite bearing 96.3 bedding/banding @ ctc gradational	55 60			-bands of very fine laminations of biotite 92.3-93.3 BCD 15929
99.00 TO 140.05	«ARG/EPI» ARGILLITE EPICLASTIC	Colour: black Grain Size: f. g. -Argillite -massive homogeneous dominates unit with screens of epiclastic lapillistone, felsic ashes and crystal tuffs ⎨100.1-100.7⎬ «MD» fsp porphyritic, biot alt'd, ctc are irregular but appear to have chilled the sediments lower ctc runs along c.a. 99.0-100.1 massive arg 100.7-102.5 epiclastics - biot altered 102.5-103.7 mass arg 103.7-109.25 epiclastics, minor arg 109.25-109.45 mafic dike? -biot 109.45-112.72 argillite ⎨112.72-113.40⎬ «MD» 113.40-115.98 argillite		-tuffaceous units show weak-mod biot-cord hflse	-1-2% po in arg -po common on foliation planes	113.98-118.98

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		115.98-117.40 epiclastics 117.40-120.09 argillite 120.09-122.20 epiclastics 122.20-123.2 argillite 123.20-128.3 epiclastics 128.3-140.05 argillite -quite massive with increase in sulphide content	60		122.20 -po frgment 1 cm 130.6-131.80, 134.50 -po 1-3% locally on shear planes and as fragments/beds?	BCD 15930 126-126.5 BCD 15931 130.4-130.9 BCD 15932
140.05 TO 150.51	«BAS FL» MAFIC FLOW	Colour: grey green Grain Size: f.g. to m.g. -faintly fsp phyric occasional epidote and/or chlorite veinlets bearing pyrrhotite ┤148.05-148.8├ «MD» -good chills - younger carb-filled amyg		-moderate biotite alteration		-mafic sill
150.51 TO 152.05	«ARG»	Colour: black Grain Size: f. g. 152.0 flt, 1 cm gouge -massive, homogenous, occasional si veinlet		-nil	-nil	
152.05 TO 153.52	«BAS FL» MAFIC FLOW	Colour: grey green Grain Size: f. g. to m. g. -as previously described 140.05-150.51				
153.52 TO 203.30	«ARG/ASH»	Colour: black Grain Size: -massive, homogenous -hornfels 153.52-154.5 arg 154.3-158.77 Rhy ash hfled 158.77-159.45 arg ┤159.46-160.3├ «MD»		-biotite mod-st -felsics have cordierite development		-155-158.0 BCD 15933

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		160.3-160.93 arg 160.93-160.8 felsic ash tuff? 161.8-174.6 mass arg 1-3% po 174.6-176.2 chty ash 2-3% py ⟨177.5-181.0⟩ «MD» 181.0-186.5 arg massive 186.5-188.3 felsic unit str. cord/biot 188.3-190.8 arg with occasional cherty ash beds ⟨198.8-199.30⟩ «CHT/ASH» -chert ash, 3% py -poss horizon 199.3-203.30 arg with occasional ash ctc gradational	70 65		169.5 -po frag, sagging bedding suggesting tops downhole -occasional po beds(?) 1-2 mm and frags associated with ash (FAT) screens within arg ⟨198.8-199.30⟩ «3% py»	181.59-184.59 BCD 15934 198.80-199.30 BCD 15935 chty ash
203.30 TO 214.05	«EPI» EPICLASTICS	Colour: mottled purple and grey Grain Size: f.g. and m.g. -f.g. grey matrix with variable biotite contact -occasional large siliceous patches interpreted to be the fragments -banded zones possible altered ash beds -often have associated py laminae -notable cherty zones ctc gradational		«s biot, cord» -strong biotite and cordierite hornfels	205.05 py laminae v.f.g.	209.75-212.75 BCD 15936
214.05 TO 221.43	«RHY TBX»	Colour: mmotttled grey Grain Size: c. g. -numerous siliceous fragments -frag suppored -frags are vague, however show a weak preferred orientation @	65	«m-s biot»	-nil	-as seen in previous holes Slumach hangingwall rhy TBx/LT

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
221.43 TO 227.69	«MD» MAFIC DIKE	Colour: lt olive green Grain Size: f.g. to m.g. -fsp hyric -HCl rx -preceeded by black f.g. rock that could be part of volcanics from 221.43-222.0 ctc irregular				
227.69 TO 251.91	«RHY TBx»	-resume main unit below 238.0 increase in cordierite development quartz knots and disseminations 233.7-234.8 -quartz vein with disseminations of fleshy pink mineral 236.0-236.75 -Mafic dike/sill type -no chill biot altered ctc intensely spotted cordierite screens alternate with grey zones -possibly altered fragments derived from underlying units ctc sharp	 64 70	-below 238.0 intense cordierite str. biot ⟨238.0-251.91⟩ «i cord, s. biot»		-may include some altered seds which would give peculiar chemistry 238.50-241.50 BCD 15937 -intensely hornfelsed
251.91 TO 333.00	«RHY LT»	Colour: purple and grey Grain Size: f. g. to m. g. 252.22-254.81 -andesite -possible andesite tuff with intense biotite cordierite development -very small, << 1 mm, cordierites -unit could be a sediment with peculiar chemistry but does have biotite mantling cordierites 254.81-255.38 -possible transition zone? -cherty rhy - lt. green -less biotite		⟨252.22-254.81⟩ «i biot, cord» biotite - cordierite 254.8-255.38 -cordierite	⟨252.22-254.81⟩ «10% py/po» -7-10% py/po disseminated as well as f. g. veinlets cutting across core axis v. f. g.	Slumach composite rhyolite sequence 253.3-254.8 BCD 15938

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		255.30-255.32 - py/po poss. bed/horizon	70			
		⟨255.32-256.40⟩ «CHT» Chert, could be silicified rhyolite			-with 2-3% py in veinlets and lenticular frags bedding parallel	254.80-255.80 BCD 15939
		⟨256.40⟩ «Rhy Lt» Rhy Lt/ -includes olive green spots poss cords		-i cord.	-2-3% py	
		⟨256.36-256.70⟩ «FLT» -biotite -healed frags of rhy				
		⟨256.80⟩ «FLT» 1 cm gouge				
		⟨257.0⟩ «FLT» -1 cm gouge				
		⟨257.70⟩ «FLT» 1 cm gouge				-begin poor recovery bad ground -losing water pressure downhole -phreatic breccia?
		Slumach rhyolite -lapilli tuff, monolithic, angular to subangular siliceous fragments		-i cord, mod biot	-1-3% locally v. f. g. py	261.82-264.82 BCD 15940 -bad ground, very blocky
		⟨266.0⟩ «FLT» -10 cm gouge				262.43-263.50 -.2 m core loss
		⟨268.15⟩ «FLT» -20 cm gouge				264.26-266.85 -core ground
		⟨268.83⟩ «FLT» -20 cm gouge -siliceous patches and clots with local biotite flooding				268.53-268.83 -10 cm core loss
		⟨269.0-270.6⟩ «MD» black, f.g. and vague fsp 0				272.22-273.42 BCD 1594 -1% sph, tr. cp
					273.50-273.54 -sph band or bed, 30% sph, 5% ga sph is medium to dark bown -siliceous frags incorporated -at 60 deg to ca	273.42-274.02 BCD 15942 -3-5% Zn /.6 m assay 274.02-275.22 BCD 15943

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
					273.54-273.73 -lean zone, siliceous vague frags, tr. sph	1-2% sph
		Colour: black and white			273.73-274.02 -3% sph, siliceous frags with matrix occurence of lt. honey coloured sph	281.87-283.37 BCD 15944 1-2% Zn, Ba? /1.5 m assay
		274.25 -angular, siliceous fragments up to 4 cm in size -disseminated sph in matrix		274.50-280.88 -str. intense biotite in matrix of siliceous frags -tr. silica	274.02-280.88 -1-2% diss flecks of sph, tr. gal	283.37-284.87 BCD 15947 3-5% Zn /1.0 m assay ADDITIONAL SAMPLES
		⟨280.88-281.57⟩ «MD» -good chills		281.57-281.85 -str. to intense biotite flooding matrix	281.57-283.33 -2-3% sph disseminations and clots to 1 mm size	275.22-276.72 BCD 15948 276.72-278.22 BCD 15949
		284.84-285.87 -quartz flooding introducing sph to matrix of siliceous frags. 285.50-285.7 genuine qtz veins at 40 deg to c.a. quartz trends at -resume biotite flooded rhy LT	40	281.85-283.33 -str. -int silica	-tr. cp, tr. ga 282.50-282.6 1-2% cp ground core CORE LOSS .05 m	278.22-279.72 BCD 15950 279.72-280.72 BCD 15976
		⟨294.0-296.0⟩ «MD» -numerous felsic lithics, vague sub-rounded with matrix of biot -biot sometimes resemble frags		283.33-284.80 -str. intense biot 285.84-288.0 -str. -intense biot	283.33-284.8 -tr. 1% sph 284.84-285.87 -3-5% sph, tr 1% ga, tr-1% cp ⟨273.42-333.0⟩ «1%-2% sph» -sph 1-2%, disseminate in 1-2 mm clots 60 meters!	280.72-281.87 BCD 15977 -.43 m Rhy + Dike 296.48-297.48 BCD 15978 -stgr. + tr. cp in .3 m rhy 297.48-298.48 BCD 15979
		308.76 -siliceous blocks some felsic frags may be quartz porphyritic			299.75-300.03 -qtz-sph stgr -2-3% sph siliceous zones frequent	298.48-299.68 BCD 15980 299.68-300.18 BCD 15981 -2-3% Zn /.5 m assay 300.18-301.68 BCD 15982
		Slumach Biot-flooded Rhy LT cont'd		-i biot flood locally str. si	-tr-2% sph	309.46 REDUCE TO BX

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		ctc sharp but broken			322.25-322.75 -3-4% sph includes: @ 322.6, a 2-2.5 cm band of massive sphalerite 43 deg to c.a. -irregular ctc with siliceous host NOTE: NON-CONDUCTIVE (ohm meter) ⟨322.6⟩ «MS/2.5 cm sph»	320.75-322.25 BCD 15983 322.35-322.75 BCD 15984 -1-2% Zn 2-2.5 cm massive sph 322.75-324.25 BCD 15985
333.00 TO 399.14	«AND»	Colour: purple and brown and rey Grain Size: m. g. to c. g. ⟨333.0-339.43⟩ «MD» -sill/flow variety -biotite cordierite hornfels -notable silica filled amygdules at top of unit -occasional wormy silica veinlet ⟨340.3-344.35⟩ «MD» -sill/flow variety -cordierites elliptical long axis approx 5-6 mm or less -first appearance of a reflective mineral poss muscovite occuring in matrix giving it a lt blue sheen ⟨367.74-370.40⟩ «MD» -good chill margins ⟨373.99-387.40⟩ «MD» -sill/flow variety		«s biot, cord» -str. biot-cordierite	387.40 -py 1-3% diss -qtz veinlets 1-2 mm cary 1% sph at 389.30 and 390.10	-dike at felsic-mafic ctc MAR ANDESITE 337.6-338.1 BCD 15986 351.0-354.0 BCD 15987 378.87-381.87 BCD 15988
	E. O. H.					

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU g/T	BA %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	AG PPB	AU PPB	BA PPM	AS PPM	COMMENTS
15942	273.42	274.02	0.60	.038	2.87	.31	1.70	1.02	.20								
15944	281.87	283.37	1.50	.143	.66	.13	6.20	.21	.21								
15946	284.87	285.87	1.00	.284	4.75	.38	8.00	7.39	.32								
15984	322.25	322.75	0.50	.202	3.72	.03	3.10	.20	.10								

HOLE NUMBER: MM-12 GEOCHEM. SHEET DATE: 22-March-1989

Sample	From (m)	To (m)	Length (m)	AL2O3 %	BA %	CAO %	FE2O3 %	K2O %	MGO %	MNO2 %	NA2O %	P2O5 %	SIO2 %	TIO2 %	S %	TOT %	AG PPM	AS PPM	BA PPM	CU PPM	PB PPM	SB PPB	ZN PPM	AU PPB
15926	24.00	27.00	3.00	17.18	0.039	2.64	6.04	1.86	1.99	0.32	4.8	0.19	60.34	0.73	0.05	96.21	2.2	10	246	7	33	2	97	5
15927	50.75	53.75	3.00	16.19	0.061	1.79	3.16	3.17	2.17	0.11	2.74	0.13	66.13	0.37	0.28	96.32	1	19	40	8	16	2	48	5
15928	75.90	78.90	3.00	17.45	0.044	6.43	9.13	1.12	6.76	0.37	3.69	0.31	48.75	0.98	0.06	95.13	1.4	8	290	17	13	3	56	10
15929	92.30	93.30	1.00	16.85	0.057	1.66	4.23	1.96	2.15	0.11	3.73	0.11	64.72	0.49	0.36	96.46	1	16	111	7	16	2	57	5
15930	115.98	118.98	3.00	16.67	0.063	2.03	6.61	1.89	2.24	0.2	2.77	0.13	61.32	0.59	1.26	95.82	1.8	98	199	75	23	3	117	5
15931	126.00	126.50	0.50	16.18	0.057	10.38	6.37	1.13	2.33	0.5	1.92	0.2	51.41	0.44	1.41	92.36	0.3	73	216	11	39	4	73	5
15932	130.40	130.90	0.50	17.9	0.069	7.53	6.55	1.32	2.61	0.37	2.06	0.16	52.93	0.47	1.57	93.58	1	37	233	9	47	5	79	5
15933	155.00	158.00	3.00	16.05	0.072	1.16	2.42	2.97	1.62	0.11	1.75	0.06	69.79	0.32	0.23	96.57	0.5	6	116	11	19	1	62	5
15934	181.59	184.59	3.00	15.37	0.056	2.36	4.86	2.46	1.66	0.13	1.91	0.15	64.74	0.48	1.68	95.89	0.6	31	72	32	22	1	119	5
15935	198.80	199.30	0.50	17.55	0.05	1.63	3.56	2.4	1.3	0.09	3.8	0.11	64.64	0.34	1.22	96.71	0.5	24	49	13	16	1	36	5
15936	209.75	212.75	3.00	15.72	0.064	1.49	3.08	1.99	1.08	0.24	4.33	0.18	67.89	0.31	0.3	96.7	0.5	1	49	7	22	1	85	5
15937	238.50	241.50	3.00	15.19	0.068	1.67	1.78	2.23	3.15	0.15	2.16	0.04	69.17	0.18	0.04	95.85	0.6	14	82	8	14	1	44	5
15938	253.30	254.80	1.50	21.12	0.105	0.25	7.28	4.48	1.75	0	0.34	0.18	56.44	1.09	3.62	96.69	1.2	25	171	48	20	1	95	5
15939	254.80	255.80	1.00	18.5	0.083	0.1	4	3.5	0.96	0	0.52	0.07	65.92	0.27	3.4	97.36	0.6	28	109	25	27	1	110	5
15940	261.82	264.82	3.00	16.38	0.145	0.03	2.29	2.94	3.27	0.02	0.29	0.07	69.09	0.27	1.26	96.08	2.6	9	138	11	33	1	85	5
15941	272.02	273.42	1.40	11.69	0.202	0.05	2.02	4.26	1.88	0.08	0.18	0.06	75.55	0.22	0.46	96.65	0.8	23	151	93	294	1	1135	55
15943	274.02	275.42	1.40	9.7	0.245	0.14	1.86	4.47	1.23	0.01	0.15	0.07	77.3	0.18	0.97	96.33	1.7	1	154	693	424	1	6146	1000
15948	275.22	276.72	1.50	10.71	0.309	0.2	1.5	5.6	1.35	0.21	0.18	0.1	76.53	0.21	0.22	97.13	0.8	25	174	57	58	1	1166	25
15949	276.72	278.22	1.50	12.67	0.32	0.2	1.91	6.34	1.74	0.18	0.2	0.08	72.29	0.25	0.46	96.65	1	2	192	47	417	1	2990	10
15950	278.22	279.72	1.50	11.2	0.286	0.21	1.51	5.95	1.39	0.03	0.2	0.08	75.15	0.22	0.5	96.75	1.1	1	131	88	765	1	4261	5
15976	279.72	280.72	1.00	12.24	0.291	0.2	1.69	6.16	1.63	0.07	0.2	0.09	72.74	0.25	0.68	96.24	1.3	1	147	32	866	1	4885	5
15977	280.72	281.87	1.15	15.66	0.137	3.31	5.52	3.12	1.79	0.22	2.76	0.27	62.14	0.64	0.15	95.76	2	1	67	8	116	1	1786	5
15945	283.37	284.87	1.50	12.36	0.31	0.17	2.25	6.25	1.81	0.29	0.19	0.1	71.94	0.26	0.52	96.45	0.6	12	160	115	55	1	1768	145
15947	285.87	286.87	1.00	11.55	0.28	0.1	2.02	6	1.56	0.02	0.18	0.1	73.31	0.22	0.83	96.19	2.4	1	177	301	435	1	5270	120
15978	296.48	297.48	1.00	9.32	0.246	0.13	1.94	4.9	1.56	0.02	0.2	0.07	74.81	0.18	1.85	95.22	2.3	1	110	782	59	1	38787	45
15979	297.48	298.48	1.00	10.53	0.287	0.33	1.91	5.75	1.98	0.4	0.27	0.07	74.15	0.21	0.14	96.03	0.8	8	98	91	36	1	1803	5
15980	298.48	299.68	1.20	11.27	0.259	0.46	2.89	5.46	2.7	0.57	0.2	0.12	71.38	0.3	0.36	95.98	0.9	26	108	72	53	3	1494	10
15981	299.68	300.18	0.50	11.34	0.252	0.1	2.92	5.31	1.64	0.01	0.25	0.1	68.35	0.22	3.97	94.47	3.3	6	84	1994	136	1	30068	195
15982	300.18	301.68	1.50	12.29	0.288	0.21	2.87	5.98	2.22	0.41	0.2	0.08	71.09	0.26	0.72	96.61	0.8	4	119	43	54	2	2129	5
15983	320.75	322.75	2.00	12.39	0.151	0.26	2.55	5.05	1.8	0.22	0.4	0.08	73.09	0.23	0.59	96.81	1.2	7	166	248	65	1	1828	30
15985	322.75	324.25	1.50	11.02	0.222	0.16	2.14	5.19	1.86	0.24	0.29	0.06	74.57	0.21	0.48	96.46	0.9	25	145	116	196	1	1056	25
15986	337.60	338.10	0.50	15.69	0.031	11.11	9.2	1.18	6.3	0.24	1.6	0.22	45.48	0.86	0.26	92.21	1.3	5	87	233	30	4	42	35
15987	351.00	354.00	3.00	17.35	0.058	0.19	7.58	3.94	3.02	0.35	0.34	0.17	61.97	0.84	0.17	95.98	0.4	1	78	30	13	1	508	20
15988	378.87	381.87	3.00	17.57	0.034	9.17	9.38	1.18	7	0.38	1.87	0.23	44.99	0.91	0.02	92.78	0.1	1	41	29	11	1	109	5
15989	394.76	397.76	3.00	17	0.194	0.59	7.02	5.43	3.14	0.39	0.87	0.26	58.86	0.74	1.32	95.84	0.2	14	124	43	16	4	212	10

MM-88-13

PURPOSE: To test the Slumach stratigraphy for VMS mineralization 100 meters to the southeast of the very encouraging MM-88-12.

0.0 to 3.35	CASING		
3.35 to 68.00	EPICLASTICS		
68.00 to 101.35	EPICLASTICS / ARGILLITE transition		
101.35 to 145.92	ARGILLITE	pyrrhotite tr-2%	
145.92 to 210.77	EPICLASTICS/RHY TBx	below 160 moderate cordierite	
210.77 to 246.28	RHY TBx	Slumach hangingwall	
		mod cord.	
246.28 to 250.34	ANDESITE	strong biotite-cordierite hornfels	
		begin Slumach rhyolite package	
250.34 to 250.70	FAULT ZONE		
250.70 to 326.30	RHY LT	str cordierite	
		local silicification	
		monolithic, densely packed	
		tr sphalerite, tr-1% galena	
		260.20-263.00 7-20% py.	
		273.50-283.46 FLT 275.54-276.45 CORE LOSS	
		283.46-293.00 INT TBx wk-mod. biot	
		293.00-326.30 RHY LT/TBx	
		tr-2% sphalerite	
		299.90-300.2 Tr cp, 1-2% sph.	
		319.13-325.22 CORE LOSS	
326.30 to 326.80	FAULT (?)	325.22-326.44 CORE LOSS	
326.80 to 334.31	RHY LT	possible intermediate fragmental	
		biotite flooded	
		locally 1-2% sph	
334.31 HOLE ABANDONNED		CORE BARREL LEFT IN HOLE	

HOLE NUMBER: MM-13

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: MAGGIE
PROJECT NUMBER: 323
CLAIM NUMBER: MAR
LOCATION: Britannia-Squamish

PLOTTING COORDS GRID: Maggie
NORTH: 492.00
EAST: 1325.00E
ELEV: 1153.00

ALTERNATE COORDS GRID: Maggie
NORTH: 4+92N
EAST: 13+25E
ELEV: 1153.00

COLLAR DIP: -81° 0' 0"
LENGTH OF THE HOLE: 334.37m
START DEPTH: 0.00m
FINAL DEPTH: 334.37m

COLLAR GRID AZIMUTH: 3° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 48° 0' 0"

DATE STARTED: October 15, 1988
DATE COMPLETED: November 4, 1988
DATE LOGGED: 0, 0

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

PULSE EM SURVEY: NO
PLUGGED: NO
HOLE SIZE: NX/BX

CONTRACTOR: Tonto
CASING: 3.35
CORE STORAGE: Triton, Squamish

PURPOSE: To test the Slumach Horizon toward the southeast along strike for VMS type mineralization

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
42.67	-	-81° 0'	ACID	OK		-	-	-	-	-	
91.44	-	-79° 0'	ACID	OK		-	-	-	-	-	
146.00	-	-79° 0'	ACID	OK		-	-	-	-	-	
205.44	-	-79° 0'	ACID	OK		-	-	-	-	-	
241.86	-	-79° 0'	ACID	OK		-	-	-	-	-	
276.46	-	-79° 0'	ACID	OK		-	-	-	-	-	
311.81	-	-79° 0'	ACID	OK		-	-	-	-	-	
200.26	39° 0'	-83° 0'	TRO-PARI		No high po content	-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 3.35	Casing					
3.35 TO 68.00	«EPI» EPICLASTICS	Colour: grey Grain Size: m.g. -thin (1 cm) to thick (up to 1.0 m) beds of well sorted fine to medium grained clastic material -occasional interbeds of siliceous material possibly felsic ashes. well bedded @ ┤22.20├ «FLT» 2-3 cm gouge ┤35.0-35.1├ «MD» -Mafic Dike -good chill 38.71 -occasional lapilli size frags bedding 46.33 ┤56.17-61.50├ «ID» -andesite dike -intermediate dike, carbonate filled amygdules -olive green, lt red mineral - hematite -chills ┤68.0-70.34├ «ID» -andesite dike -fsp 0, good chills, blue chill, chills to white, carb-filled amygdules	 43 44	-weak biotite 47.05 po frag	-nil -weakly magnetic -possible sulphide fragments <= 1 cm rusty sweats 24.78	-broken surfaces look like a fine grain intrusive - wacke seen on switch back road just below set up 30.48-33.48 BCD 15962 53.0-56.0 BCD 15963
68.00 TO 101.35	┤EPI/ARG├ EPICLASTICS ARGILLITES	Colour: purple to grey Grain Size: f.g. to m.g. ┤68.0-70.34├ «MD» -fsp 0 good , .5 m chills -finer grain than above unit with biotite dustings		-biot mod.	-tr. po on foliation planes of argillaceous material	-transitional

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-occasional XT beds, minor felsic ash beds -argillaceous component increasing downhole 72.24 flt, 10 cm rubble ⟨87.58-89.81⟩ «MD» -amygdules, good chills ctc ⟨93.0⟩ «FLT» 3 cm gouge and rubble zone 99.38 good bedding	 75 44			 84.58-87.58
101.35 TO 145.92	«ARG» ARGILLITE	Colour: black Grain Size: f.g. ctc gradational -massive, blocky, homogenous -faint hornfels visible as pin size black spots ⟨104.24⟩ «FLT» -steep angle, minor gouge -occasional 2-3 cm screens of sericitic material possible narrow dikes? (126.0 eg.) -occasional felsic ash beds ⟨124.51-125.72⟩ «MD» -HCl filled amygdules ⟨137.70-138.7⟩ «MD» -good chill margins ctc gradational over 1 m		-nil -chlor on foliation planes	-tr 2% po, f.g., diss -occasional pyrrhotite frags on clots and smeared on foliation planes -locally 3-4% f.g., diss, py/po 133.8 -1 cm mass po/py bed 30 deg to c.a. -felsic ash beds contain 5-7% py/po	 -Between 116.43 and 119.79, blocky ground -drillers placed footage blocks incorrectly Result: missing core 1.64 m 127.0-128.0 BCD 15965 132.6-133.1 BCD 15966

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
145.92 TO 210.77	«EPI/RHY» EPICLASTICS RHYOLITE	Colour: mottled purple and grey Grain Size: f.g., c.g. -mottled swirls of biot. rich zones and siliceous zones -siliceous zones could be large felsic frags -in some places, bedding is seen,however bedding angles are all over -felsic ash tuffs/cherts ┤151.20-152.0├ «MD» -good chills ┤152.86├ «FLT» -rubble zone ┤167.95-176.80├ «MD» -fsp 0, massive, weak biot, rich in phenos 181.4-182.1 -mafic dike runs along c.a. ┤193.0-210.77├ «MD» -fsp 0, weak biot altered variety ctc runs along core from 193.0-195.3 and includes a tectonic bx, grey, very massive ┤196.12-196.27├ «MD» -good chills	45	-below 161.50 cordierite, weak mod. in screens 5-10 cm -weak biot -weak to mod biot in dike	-nil - tr. po 193.0-195.3 -py along ctc with wallrock 195.6-195.8 -py 5-10% fine in matrix of tectonic bx 198.7 -po/cp veinlets 1-2 mm x-cutting and on foliation planes	154.53-157.53 BCD 15967 184.25-187.25 BCD 15968 199.0-202.0 BCD 15969
210.77 TO 246.28	«RHY TBx»	Colour: white and pinkish Grain Size: c.g. m.g. -large 4-5 cm felsic lithics appear well rounded occur withing swirls of biotite rich material matrix? other nebulous shapes poss. frags ┤213.82-217.17├ «MD» -lt grey green fsp 0 -weak HCl rx		-weak to mod biot	-nil -tr po locally	-Slumach hangingwall Rhyolite -HCl rx on broken surface calc-silicate hornfelsed

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		219.6 flt, at steep angle to c.a. ⌈233.78-236.22⌋ «MD» -very blocky and broken below 233.0				221.0-224.0 BCD 15970
246.28 TO 250.34	«AND» ANDESITE	Colour: black with light blue spots Grain Size: -very strong biotite cordierite hornfels -elliptical light blue spots in a matrix of biotite -2-3 cm cordierites		«s biot, cord» -strong cordierite and biotite	 -tr. py	 247.0-250.0 BCD 15971
250.34 TO 250.70	«FLT»	Colour: white and grey Grain Size: -gouge and rubble zone				
250.70 TO 326.30	«RHY» LT	Colour: lt grey and white Grain Size: f.g. to m.g. -very vague lapilli -where visible appears to be sub-angular, densly packed fragmental -felsic lithics ⌈257.05-258.07⌋ «MD» -good chill, HCl rx -carb-filled amygdules ⌈259.07-259.25⌋ «MD» -good chill margins 266.85 possible bedding @	 15	 -mod - str. silicification in some zones cordierite strong below 264.26	 -py 1%, ga tr-1%, tr sph diss as grains 255.65-255.70 -steel grey mineral in fracture 261.21-263.0 -5-7% py diss.	 -very blocky and broken ground -poor recovery Slumach Rhyolite 255.45-255.95 BCD 15972 267.3-270.3 BCD 15973

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		271.42-271.52 Mafic Dike				
		273.5-283.46 -fault zone		-alteration: weak and patchy		
		273.5-274.1 -completely ground cuttings indicate possible rhyolite			⟨283.46-334.31⟩ «tr-2% sph»	
		274.54-276.45 -core loss				275.54-276.45 -0.91 m core loss
		276.45-283.46 -completely ground up core				
		283.46-293.0 -Intermediate Tuff breccia -large nebulous felsic frags in purplish, biotite rich matrix. no sulphides -occasional biotite rich mafic frags		⟨264.26-283.46⟩ «i cord»	at 293 -tr. 2% sph as veinlets < 1 mm in matrix of tuff-breccia	
		287.33-288.70 -Mafic Dike -fsp porphyritic tr py/po		⟨283.46-334.31⟩ «i biot»		
		297.0 relic beds? @	45			296.27-297.27 BCD 15974
		298.10 relic beds? @	40		299.90-300.2 tr. cp, 1-2% sph	299.84-300.84 BCD 15975
		293.0 Rhy Tbx -felsic frags up to 6x4 cm in size -some fragments have reaction rims				
		308.90-309.22 -Mafic Dike				308.46-310.59 -very blocky, bad ground
						312.95-313.95 BCD 15990
						⟨319.13-325.22⟩ «core loss» 5.3 m core loss
						325.22-326.44

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
						0.88 m core loss
326.30 TO 326.80	«FLT»	-broken ground				
326.80 TO 334.31	«AND»	-intermediate? -biotite flooded matrix -can discern mafic and felsic fragments angular to sub-angular 326.70 -poss fault		-mod-str. -biotite-cordierite hornfels	-locally 1-2% sph diss as grains	326.44 -mislatch Mar Andesite 331.06-334.06 BCD 15991 -Hole abandonned, drill crew lost core barrel in hole
	E. O. H.					

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU g/T	BA %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	AG PPB	AU PPB	BA PPM	AS PPM		COMMENTS

HOLE NUMBER: MM-13 ASSAY SHEET DATE: 27-March-1989

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU g/T	BA %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	AG PPB	AU PPB	BA PPM	AS PPM		COMMENTS

Sample	From (m)	To (m)	Length (m)	AL2O3 %	BA %	CAO %	FE2O3 %	K2O %	MGO %	MNO2 %	NA2O %	P2O5 %	SIO2 %	TIO2 %	S %	TOT %	AG PPM	AS PPM	BA PPM	CU PPM	PB PPM	SB PPB	ZN PPM	AU PPB
15962	30.48	33.48	3.00	16.85	0.058	2.62	4.24	1.65	1.43	0.26	4.99	0.16	63.55	0.52	0.02	96.37	1.5	26	103	8	20	1	65	10
15963	53.00	56.00	3.00	16.54	0.025	2.13	3.82	2.75	1.81	0.16	3.32	0.14	65.47	0.46	0.09	96.73	1.4	55	62	9	28	3	133	5
15964	84.58	87.58	3.00	18.06	0.025	2.65	5.69	2.01	2	0.13	4.1	0.36	59.04	0.82	0.95	95.87	1.1	16	75	37	22	1	100	5
15965	127.00	128.00	1.00	19.43	0.074	0.41	7.11	3.45	2.51	0.07	1.28	0.17	59.12	0.73	1.74	96.1	1.1	1	76	49	52	2	134	5
15966	132.66	133.10	0.44	17.62	0.06	3.99	5.27	2.35	1.93	0.16	2.02	0.31	62.33	0.54	1.45	98.06	3.2	49	4	11	11	7	5	30
15967	154.53	157.53	3.00	13.71	0.055	2.49	2.44	2.64	1.18	0.13	2	0.11	70.78	0.31	0.14	96	1.4	1	58	26	24	1	45	5
15968	184.25	187.25	3.00	14.71	0.045	1.48	2.46	1.37	0.95	0.11	4.23	0.13	71.58	0.44	0.03	97.57	1.7	4	58	11	14	1	37	5
15969	199.00	202.00	3.00	18.34	0.015	10.03	9.12	0.55	5.17	0.48	2.38	0.25	46.39	1.01	0.02	93.8	0.3	18	71	21	14	3	42	5
15970	221.00	224.00	3.00	14.21	0.05	3.78	3.96	0.82	2.99	0.21	3.09	0.14	66.43	0.37	0.05	96.15	1.9	16	84	53	31	1	96	75
15971	247.00	250.00	3.00	19.11	0.137	2.52	9.69	3.26	2.38	0.02	3.85	0.08	52.45	0.81	0.01	93.94	1.1	12	277	9	14	1	60	5
15972	255.45	255.95	0.50	10.63	0.852	1.24	1.89	4.03	0.7	0	0.5	0.05	74.95	0.22	1.45	96.33	7	15	361	45	207	1	672	10
15973	267.30	270.30	3.00	14.39	0.136	0.01	2.08	4.15	1.46	0	0.15	0.05	73.56	0.23	1.53	97.52	2.1	13	90	35	347	1	903	10
15974	296.27	297.27	1.00	10.17	0.079	0.01	1.38	3.19	1.06	0	0.14	0.05	80.2	0.2	0.47	96.75	1.6	14	44	44	191	1	818	5
15975	299.84	300.84	1.00	11.97	0.271	0.2	1.67	5.73	0.85	0.02	0.34	0.09	74.71	0.25	0.85	96.71	1.8	14	63	169	298	1	1064	50
15990	312.95	313.95	1.00	12.99	0.136	0.12	1.63	4.58	0.86	0.01	1.64	0.07	73.96	0.24	0.56	96.57	0.7	11	68	27	127	1	1162	5
15991	331.06	334.06	3.00	13.3	0.199	0.23	2.34	6.53	1.29	0.08	1.05	0.11	71.01	0.26	0.29	96.45	0.9	8	62	39	84	1	928	5

MM-88-14

PURPOSE: To test stratigraphy west of the L8E fault for the Slumach horizon and accompanying VMS type mineralization.

0.0 to 4.27	CASING	
4.27 to 21.60	EPICLASTICS	hornfelsed
21.60 to 68.80	ARG/ASH	argillite dominates 32.31-32.9 Fel. ash tuff 2-3% po. 62.35-62.6 F.A.T. 3-5% sphalerite
68.80 to 74.17	EPICLASTICS	alternating ash and crystal tuffs
74.17 to 76.91	MAFIC DIKE	hble phyric, fresh
76.91 to 78.47	EPI/ARG	argillaceous ash beds
78.47 to 101.50	RHY LT/TBx	felsic pumice lapilli,crowded moderate foliation
101.50 to 133.23	RHY/DAC LT	Slumach equivalent felsic lithics dominate dark flame-like shardy lapilli poss collapse pumice fragments individual felsic frags contain f.g. py, tr ga. mod-str fol'n
133.23 to 138.80	BAS FLOW	amygdaloidal beginning of Mar sequence(?) or inter-Slumach rhyolite mafic unit.
138.80 to 166.75	INT XT-LT	heterolithic fresh
166.75 to 168.18	ASH	f.g. ash tuff beds
168.18 to 174.57	MAFIC DIKE	
174.57 to 220.07	MAFIC LT	strong foliation developed frags attenuated >20:1
E.O.H.		174.75-175.0 2-3% cp in veinlets po. frags 1X5mm potential horizon 175.00-178.75 tr cp, mod biot. numerous wormy silica veinlets 198.12-204.87 wk-mod biot.

HOLE NUMBER: MM-14

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: MAGGIE
PROJECT NUMBER: 323
CLAIM NUMBER: WAR EAGLE
LOCATION: Britannia-Squamish

PLOTTING COORDS GRID: Maggie
NORTH: 55.00N
EAST: 702.00E
ELEV: 810.00

ALTERNATE COORDS GRID:
NORTH: 0+55
EAST: 7+ 2E
ELEV: 810.00

COLLAR DIP: -55° 0' 0"
LENGTH OF THE HOLE: 220.07m
START DEPTH: 0.00m
FINAL DEPTH: 220.07m

COLLAR GRID AZIMUTH: ° ' "

COLLAR ASTRONOMIC AZIMUTH: 45° 0' 0"

DATE STARTED: October 29, 1988
DATE COMPLETED: September 11, 1988
DATE LOGGED: 0, 0

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

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

CONTRACTOR: Tonto
CASING: 5.29
CORE STORAGE: Triton, Squamish

PURPOSE: To test stratigraphy west of the the line 8E faultfor the Mar Andesite/Slumach rhyolite

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.28	-	-53° 0'	ACID	OK	
72.54	-	-53° 0'	ACID	OK	
91.44	-	-52° 0'	ACID	OK	
121.92	-	-52° 0'	ACID	OK	
152.40	-	-52° 0'	ACID	OK	
182.88	-	-52° 0'	ACID		Leaked
218.54	44° 0'	-54° 0'	TRO-PARI	OK	
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Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 4.27	Casing					
4.27 TO 21.60	«EPI» EPICLASTICS	Colour: lt brown and white Grain Size: f.g. -thin bedded at 20.03, ash tuff and wacke beds moderately hornfelsed (biotite) beds range from 1-2 mm to 10 cm in thickness -well sorted, includes mminor felsic ash tuffs and cherty beds ctc sharp but broken	55	-nil -biotite associated with hornfelsing event	-nil -trace po in felsic ash tuff bed	12.80-15.80 BCD 15992
21.60 TO 68.80	«ARG/ASH»	Colour: black and light brown Grain Size: -massive, homogeneous argillite with minor ash tuff interbeds 24.0-24.80 -XT wacke turbidite bed 42.5-43.35 -ash/epiclastics 59.28-60.28 -turbidite beds -Bedding attitudes are variable but range from 70 - 90 deg ⌈62.35-62.08⌋ «RHY ASH» Felsic ash(?) frequent beddings at	72		-po common on foliation planes as disseminations in ash tuffs and clots within argillite 32.31-32.90 -2-3% po in felsic ash tuff 46.68 -tr. cp in po streaks 43.35-63.0 -tr-1% po, more frequent clots and veins of po -po streaks are usually oriented at 50 deg to c.a. ⌈62.35-62.60⌋ «3% sph» -3-5% sph, tr. cp	-blocky 45.90-46.90 BCD 15993 -grading indicates tops uphole 62.35-62.85 BCD 15994

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		ctc gradational			62.84 -sph clot in argillite 68.20 -sph as fragments or veins in coarse grain fragmental -sph 2-3% over 10 cm	
68.80 TO 74.17	«EPI» EPICLASTICS	Colour: Grain Size: -thin bedded turbidite beds, moderately hornfelsed alternating -ash and crystal tuff beds -occasional 1-2 mm quartz vein ctc uneven but sharp	45	-nil	-nil	
74.17 TO 76.91	«MD»	Colour: green Grain Size: c.g. -hornblende phyric -very fresh		-nil	-nil	
76.91 TO 78.47	«EPI/ARG» ARGILLITE EPICLASTICS	Colour: grey, brown Grain Size: f.g. -homogenous, fine grain possible, dirty ash tuffs		-nil	-nil	
78.47 TO 101.50	«RHY TBx» LT	Colour: dirty brown Grain Size: c.g. -unusual fragment rich unit, frags supported in places -lapilli size dominate -fragments are vague with diffuse boundaries often appearing rounded -probably felsic fragments -10% true felsic subangular fragments -matrix biotite rich -moderate to strongly developed foliation @	60			-top of unit is extremely frag rich -> pumice? 82.0-85.0 BCD 15995

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		-fragments stretched often 10:1 -end on sections are well rounded				-rodding
101.50 TO 133.23	«RHY LT»	Colour: lt green, grey Grain Size: -heterolithic felsic lithics dominate -subrounded to subangular -contains 5-10% black flame-like wispy fragments -poss. collapsed pumice fragments -fragments often have alteration rims -occasional subrounded felsic flow fragment as seen in Slumach area rhyolite -moderate to str. foliation @ ctc broken	60	-nil	-tr. py 117.0 -notable -2 x 2 cm quartz porphyritic felsic flow fragment containing traces of galena	-Slumach equivalent 104.0-107.0 BCD 15996 120-123 BCD 15997
133.23 TO 138.80	«BAS FL»	Colour: dark green Grain Size: f.g. -homogenous, aphyric -amygdaloidal -amygdules up to 1 cm size reflect foliation @ -carbonate infilling some amygdules -abundance of yellow -green mineral on fracture planes ctc gradational	50	-weak chlor.	-nil	135.0-138.0 BCD 16112 138 -amygdules shape indicating tops possibly uphole
138.80 TO 166.75	«RHY XT/LT»	Colour: green and white Grain Size: c.g. and m.g. -mafic fragments and mafic matrix dominate -heterolithic -up to 10% felsic frags as seen in Slumach rhyolite -feldspar phyric -weak foliation @ includes	55	-nil	-nil	150-153.0 BCD 16113
		┤163.42-164.5├ «MD» -numerous < 1 mm -silica filled amygdules		-nil	-nil	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
166.75 TO 168.18	«ASH»	Colour: grey Grain Size: f.g. -fine grain intermediate tuffs and ashes bedding @	55	-nil	-nil	
168.18 TO 171.91	«MD» MAFIC DIKE	Colour: grey to black Grain Size: -massive, homogeneous -magnetite bearing -carbonate filled amygdules		-nil	-nil	
171.91 TO 172.70	«RHY XT/LT»	-strongly foliation @ as previously described -may be chilled by dike 172.70 flt	40			
172.70 TO 173.35	«MD»	-as previously described 168.18-171.91				
173.35 TO 220.07	«AND LT»	Colour: dark green Grain Size: c.g. -strongly foliated @ -mafic lapilli attenuated approx 20:1 175.0-178.75 -numerous wormy silica veinlets and clots occasionally carrying cp or po disseminations	35	⌊174.75-178.75⌋ «m. biot.» -weak chlor -chlorite common on foliation planes 178	⌊174.75-175.00⌋ «2% cp» 2-3% cp veinlets 175.20 -massive po fragments up to tr. cp in po frags 5 mm x 1 mm -occuring in a band over 2-3 cm 175-178.75 tr. cp throughout	-mar andesite? -weakly magnetic magnetite? POTENTIAL HORIZON? -40 m into mafics 174.75-175.35 BCD 16114 183.0-186.0 BCD 16115 189.75 thin section

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		veinlet 1-2 mm thick -silica veins decrease in abundance downhole -where foliation not as intense mafic fragments 2-3 cm x 1 cm with sharp, shardy ends ⊣211.77-211.87⊢ «MD» ⊣215.30-215.96⊢ «MD» -v.f.g. mafic dike -amyg -black		wk biot to 198.12 198.12-204.87 -wk chlor-epi 204.87-220.07 -occasional screen of biotite altered tuff		198.0-201.0 BCD 16116 207.0-210.0 BCD 16117 217.0-220.0 BCD 16118
	E. O. H.					

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU g/T	BA %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	AG PPB	AU PPB	BA PPM	AS PPM		COMMENTS

Sample	From (m)	To (m)	Length (m)	AL2O3 %	BA %	CAO %	FE2O3 %	K2O %	MGO %	MNO2 %	NA2O %	P2O5 %	SIO2 %	TIO2 %	S %	TOT %	AG PPM	AS PPM	BA PPM	CU PPM	PB PPM	SB PPB	ZN PPM	AU PPB
15992	12.80	15.80	3.00	15.84	0.086	1.9	2.8	2.03	2.23	0.07	3.34	0.13	67.02	0.31	0.15	95.62	1	5	119	13	18	1	52	5
15993	45.90	46.90	1.00	17.41	0.066	0.16	7.75	5.65	2.36	0.07	0.16	0.13	59.55	0.43	2.75	96.08	2.1	18	55	34	22	1	97	25
15994	62.35	62.85	0.50	13.04	0.168	0.72	3.02	7.54	2.09	0.05	0.36	0.12	67.17	0.29	0.43	94.7	1.8	9	41	188	758	1	1746	15
15995	82.00	85.00	3.00	13.78	0.111	0.05	1.87	6.57	2.07	0.05	0.33	0.05	71.2	0.21	0.12	96.22	0.8	7	30	38	32	1	79	5
15996	104.00	107.00	3.00	14.68	0.077	0	1.32	3.05	2.48	0.04	2.34	0.05	71.43	0.22	0.04	95.51	1	5	52	14	15	1	30	5
15997	120.00	123.00	3.00	13.26	0.054	0.03	1.26	1.8	1.82	0.04	3.75	0.08	74.37	0.21	0.03	96.49	0.9	11	43	13	16	1	26	10
16112	135.00	138.00	3.00	16.36	0.005	1.39	7.69	0.26	7.78	0.07	4.58	0.34	54.15	0.67	0.06	92.97	0.6	15	18	16	20	1	61	5
16113	150.00	153.00	3.00	15.7	0.033	0.5	2.64	1	2.17	0.09	6.29	0.1	67.33	0.28	0.03	95.91	0.9	3	40	9	17	1	45	5
16114	174.75	175.35	0.60	19.04	0.163	0.33	8.82	5.41	3.78	0.14	0.62	0.22	56.78	0.4	0.72	96.01	5.2	6	151	2318	12	1	133	35
16115	183.00	186.00	3.00	20.07	0.047	0.49	9.81	4.26	6.1	0.1	0.56	0.23	51.13	0.52	0.02	92.94	0.5	20	38	92	15	5	99	10
16116	198.00	201.00	3.00	16.18	0.06	0.71	6.81	3.05	5.9	0.14	1.66	0.21	57.75	0.39	0.01	92.49	0.6	19	50	9	13	1	96	5
16117	207.00	210.00	3.00	19.37	0.033	0.49	8.89	2.4	5.91	0.16	3.09	0.21	53.17	0.58	0.01	93.92	0.6	12	32	9	20	3	104	5
16118	217.00	220.00	3.00	16.64	0.148	1.06	5.14	3.83	4	0.13	2.51	0.18	60.2	0.39	0.22	94.07	0.6	5	272	9	18	1	80	5

WAR EAGLE

JARMILA Fr.

CLARKE

MAR CLAIM

BASELINE

BASELINE

MM-87-01 (-45°)

MM-87-02 (-45°)

MM-87-03 (-45°)

MM-87-04 (-45°)

MM-87-05 (-80°)

MM-87-06 (-75°)

MM-87-07 (-85°)

MM-87-08 (-62°)

MM-87-09 (-90°)

MM-88-10 (-78°)

MM-88-11

MM-88-12

MM-88-13

ADIT

WEST ZONE

CREEK ZONE

SUMACH ZONE

EAST ZONE

BASALT

L 6+00 E

L 7+00 E

L 8+00 E

L 9+00 E

L 9+50 E

L 10+00 E

L 10+50 E

L 11+00 E

L 13+00 E

- LEGEND -

6 Felsic Intrusion	3 Rhyolite
5 Mafic Intrusion	2 Dacite
4 Argillite	1 Andesite

- Cordierite Hornfels
- Geological Contact intrusive, conformable
- Drill Hole (Maggie Mines)
- Drill hole (Minnova 1987)
- Fault
- Bedding
- Jointing
- Strike & Dip
- Mineralization

MINNOVA Inc.

MAGGIE OPTION

MAR CLAIM AREA

- GEOLOGY - & DRILL LOCATIONS

SCALE: 1:1000

N.T.S. 92G/10	MAP
DRAWN BY: CB/cm	7
DATE: SEPT. 1987	

MAR ANDESITE

SLUMACH RHYOLITE

MAFIC INTRUSIVE

INDIAN Portal

Baseline 0+00

L6+00W L4+00W L2+00W L0+00 L2+00E L4+00E L6+00E L8+00E L10+00E L12+00E

fsp phyric

py sericite

4.2 sulphide frags

6.4 granodiorite

tops to west

felsic clasts in aphanitic matrix

fe clasts + flamme

rd felsic lap clasts in places grad

pervasive chl - epid alt ± clast py

py cp

chl-ep-alt

more flsc marginal phase?

mdy calc rhyt

Qpt / m.g phase?

py cp ± mo

shale/st

crater rim/flow complex

fxt/xt

fn gnd st/dt/ht

fg xt int / arg

fg xt int

cord ht 1-2% py

1-2% diss magnetite ht mt intv fg flo

fr magnetite

lam.flsic ash tuff

lam.fxat

lam.fat/fxt

soft sed defn

poss sulphide frags

mv dike

mafic intrusive / flow?

fr py

arg/xt

thy dike?

cord ht mdt flow

ht int & cord

ht int

mdt int

1 2 3

MINNOVA Inc.

INTERNATIONAL MAGGIE OPTION

MAGGIE

GEOLOGY (SHEET 1)

FOR GEOLOGY LEGEND SEE SHEET 3

SCALE: 1:2000

DRAWN BY: GF/KG/CB

DATE: DEC, 1988 N.T.S. 92G/10

FIG. NO.: 8a

MINNOVA BRITANNIA PROJECT

LEGEND

☁ WOODED AREAS

FOR GEOLOGY LEGEND SEE SHEET 3

inches 0 1 2
0 1 2 3 4 5 centimetres

BRITISH COLUMBIA GEOLOGICAL SURVEY

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

MINNOVA Inc.

INTERNATIONAL MAGGIE OPTION

MAGGIE

GEOLOGY
(SHEET 2)

0 100 200m
SCALE: 1:2000

DRAWN BY: GF/KG/CB
DATE: DEC.1988
N.T.S. 92G/10
FIG. NO.: 8b

950 900 850 800 750 700 650 600 550 500

INDIAN RIVE

MAR ANDESITE

1.1 1.1 1.1

Footwall Cordierite Hornfelsic Andesites

2.7 spotted int xt fld chl/ep altn

spotted fqxt bi mtx 3.7

cord bi hf small spots 1.1?

5.1 leucocratic equigranular quartzofldpthc intv

6.4

1.8,7 cord hf

1.8,7 fld and cord bi hf py 1-3% cp in places

12 50° 2.7

Qfld xt 2.7 xlt sph

85 66

chl/ep altd m intv cp diss+ stringers fr sph 5.1

3.7,8 Qfxt? lt

QFP

qtz fld xt (?) chl./ep altn 3.7 52 20 5.1

3.7 cord hf xt / lt

5.1 3.1 fld rhy py sph 3.1 OMDK

xt/QFP? tr py cord hf

fxlt fld ± qtz

chl/ep altn

3.7 fxt 3.7 5.1 ixt poss intv 2.7

QFP 3.1

3.1

3.1 QFP autobx? 57

SULMACH RHYOLITE

grandrt mass

rhy flows - mass/flow banded 3.7 44 sph 6.4,6.5 chl altn

3.1,8

1.1

24 80 telphyric drt - aug (?) chl'd

1.1

hf sh/fxt 75 1.1 64 ixt frag mv fld ~ flow bx?

2.7 cord hf shale 44 fxt

grandrt/aphlite dike

banded int xt bi hf chl/ep altn 2.7 26

MOUNTAIN LAKE PLUTON

MESOZOIC

CRETACEOUS

COAST PLUTONIC COMPLEX

MOUNTAIN LAKE PLUTON
SQUAMISH PLUTON
FURRY PLUTON

LOWER CRETACEOUS

MIDDLE GAMBIER GROUP-BRITANNIA PENDANT

LITHOLOGY

6 FELSIC INTRUSIONS
- 1 Dacite(in part synvolcanic-flows?)
- 2 Rhyodacite
- 3 Rhyolite
- 4 Granodiorite
- 5 Granite

5 MAFIC INTRUSIONS
- 1 Basalt
- 2 Andesite
- 3 Diorite-Quartz Diorite
- 4 Gabbro
- 5 Diabase
- 6 Lamprophyre

4 SEDIMENTS
- 1 Chert(Silic. ash)
- 2 Argillite Tuff Wacke
- 3 Siltstone
- 4 Greywacke
- 5 Conglomerate

3 FELSIC VOLCANICS

2 INTERMEDIATE VOLCANICS

1 MAFIC VOLCANICS

TEXTURES
- 1 Massive Flow
- 2 Pillowed Flow
- 3 Pillow, Flow Breccia
- 4 Breccia
- 5 Lava/Dome
- 6 Tuff/Ash
- 7 Crystal Tuff
- 8 Lapilli Tuff
- 9 Lapillistone
- 10 Tuff Breccia
- 11 Debris Flow
- 12 Heterolithic Breccia
- 13 Monolithic Breccia

SYMBOLS

- Breccia; sulphide fragments; chert fragments
- Bedding
- Foliation
- Joint
- Lineation
- Conformable contact
- Intrusive contact
- Fault
- Outcrop
- Pit
- Drill Hole
- Road
- Stream
- 1300 Contour interval 50 m
- Property boundary

ABBREVIATIONS

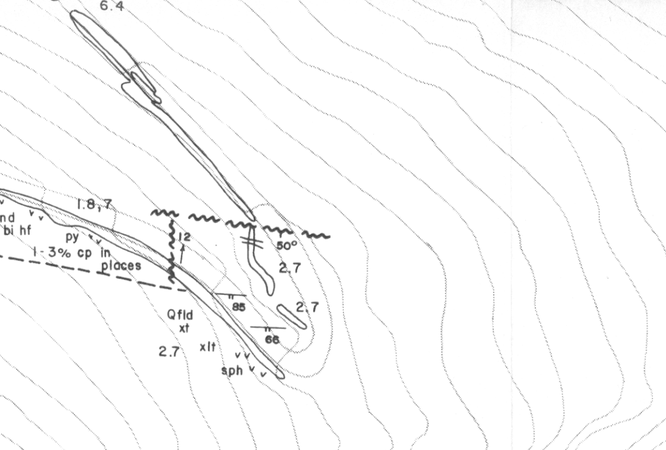
ccp - chalcopyrite, sph - sphalerite, gal - galena
py - pyrite, pyo - pyrrhotite, mag - magnetite
carb - carbonate, chl - chlorite, ser - sericite
epi - epidote, mal - malachite, biot - biotite
cord - cordierite, qfp - quartz - feldspar porphyritic
mfp - mafic - feldspar porphyritic, gms - grey mottled schist

Schist (quartz - sericite / chlorite)

Biotite - cordierite hornfels

Mineralization

1 2 3



MINNOVA Inc.

INTERNATIONAL MAGGIE OPTION

MAGGIE

GEOLOGY
(SHEET 3)

inches 0 1 0 1 2 centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

0 100 200m

SCALE: 1 : 2000

N.T.S. 92G/10

DRAWN BY: GF/KG/CB

DATE: DEC.1989

MAP: 8c