Samatosum
825139
1984

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REAI
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 530.90N
EAST: 9914.70W
ELEV: 1501.40

ALTERNATE COORDS GRID: FIELD
NORTH: 99+ 0N
EAST: 5+25W
ELEV: 1501.52

COLLAR DIP: -60° 0' 0"
LENGTH OF THE HOLE: 148.48m
START DEPTH: 0.00m
FINAL DEPTH: 148.48m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: October 2, 1984
DATE COMPLETED: October 4, 1984
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.00	-	-58° 0'	ACID	OK		-	-	-	-	-	
60.00	-	-58° 0'	ACID	OK		-	-	-	-	-	
90.00	-	-57° 0'	ACID	OK		-	-	-	-	-	
120.00	-	-56° 0'	ACID	OK		-	-	-	-	-	
148.00	210° 0'	-58° 0'	TRO-PARI		SUSPECT	-	-	-	-	-	
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FR TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 15.55	CASING «OB»					
15.55 TO 35.10	MAFIC LAPILLI TUFF «MT»	Colour - dark grey to light grey to buff Grain Size - fine grained Pale coloured <1.5mm lapilli in a fairly altered matrix. So many of the lapilli are hexagonal in shape - suspect monomineralic (cordierite?). They are NOT flattened along the moderately to weakly developed foliations. Bottom of unit (in the hole) (top in stratigraphy?) is marked by two muddy pyrite beds, approx. 10cm and 25cm thick, separated by 10cm of sericitic tuff. Contact sharp at =	90	Begins predominantly chloritic but with buff, sericitic patches. Becomes more sericitic especially so beyond 25m	Traces of pyrite only except locally in qtz-carb veins. 30% py, tr sp in beds.	Minerals are hexagonal to slightly rounded, generally white, locally tinged blue or green. Many fizz slightly when scratched. Hardness close to six but can be softer.
35.10 TO 35.40	PYRITIC ARGILLITE «PY ARG»	Colour - black Grain Size - very fine grained Weakly conductive black pyritic argillite with fine pyritic beds in upper part. Minor qtz-carb-py veinlets. Bedding 85m =	90		«15% py» Average 15% py but up to 50% locally	'Minerals' are hexagonal
35.40 TO 36.70	PYRITIC TUFF «PY TUFF»	Colour - pale grey Grain Size - fine grained Homogeneous, pale, soft tuff with finely disseminated pyrite and marcasite? Contact badly broken up partly ground.		Sericite	6-8% py (-marcasite?)	
36.70 TO 38.70	QUARTZ VEIN «QV»	Colour - white Grain Size - Bull quartz vein with 10% silvery grey sericite. Blocky and broken throughout. Contact broken.			Singe 1 1/2cm diameter bleb of cp-py in the middle.	
38.70 TO 59.60	BLACK CHERT AND CHERTY ARGILLITE «CHT+ARG»	Colour - black Grain Size - very fine grained Laminated, locally brecciated chert with minor tuff. Most is black, argillitic, quite soft. Lesser, usually thin (<5mm), light coloured chert and tuff laminae. Lots of contortion, much caused by primary slumping. Minor secondary		Tuffaceous component is often sericitized	1-2% finely disseminated pyrite throughout.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		quartz. Gouge zones: 40.8 - 41.4, 42.8 - 43.3 plus numerous very thin ones. Locally very variable but averages	80 - 90			
59.60 TO 80.30	MASSIVE CHERT «CHT»	Colour - white - creamy white Grain Size - aph Mainly massive to finely laminated chert. Moderate tuffaceous component. A few black cherty argilile beds to 64m. Contact marked by a quartz vein with mica and carbonate. 65.1 - 66.05 Several possible beds with pyrite, green mica and yellow sericite abundant 66.05 - 76.4 Very massive chert with strong pyrite as fracture fillings and in breccia zones in the matrix. No tuff component. 76.4 - 80.3 Moderately-strongly sericitic tuffaceous chert. Highly contorted	80 80	Good sericite in tuffaceous component Massive green mica locally. Strong yellow-ochre sericite	Traces of py. 20% py as semi-massive beds to 2cm. {66.05-76.4} «40% py» Up to 40% py over 10 cm averaging 5%. Very fine black py. 1% diss'd py.	
80.30 TO 93.10	BLACK CHERT «CHT»	Colour - black Grain Size - very fine grained Predominantly black, argillitic chert with lighter beds. Intensely contorted. Some interdigitation at contact.		Mod. sericite with tuffaceous component	Trace py 3-4% in tuff screens.	
93.10 TO 110.40	SERICITIC CHERT «SERT»	Colour - Grain Size - Predominantly light coloured chert with a moderate sericitic tuff component. Minor dark beds. Varies from massive, to laminated to brecciated.	70	Mod-strong sericite throughout.	Pods of galena in qtz vein at 100.00m. Otherwise just 1-2% py, locally up to 5%	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		A moderate amount of secondary quartz. Strong veins at: 97.35 - 98.7 99.6 - 100.0 and 100.2 - 100.5 Contact marked by 5cm of fault gouge.				
110.40 TO 113.30	INTERBEDDED CHERT AND MUDSTONE «CHT+MUD»	Colour - d. green to greeny grey Grain Size - very fine grained Interbeds of light grey impure chert and black mudstone. One bed has an oolitic top, indicating tops down the hole. 111.3 - 112.35 Mafic dyke. Contacts sharp at 70 degrees and 85 degrees.	70	Minor sericite with the chert.	«5% py» 4-5% finely diss'd pyrite in mudstone 5-10% py with qtz-carb veins probably associated with mafic dyke. 5% aver. overall.	
113.30 TO 126.05	BLACK CHERT «CHT»	Colour - black Grain Size - very fine grained Predominantly black, argillaceous chert with light grey chert beds and a few tuffaceous chert beds. Very donductive locally with good graphitic laminae. Highly contorted, finely laminated or brecciated usually. Grey chert component increases down the hole. Numerous thin gouge zones but little obvious displacement.	60 - 75	Sericite in tuffaceous component.	5-8% py, mostly with fine quartzose veinlets but also disseminated in some beds. Distinctly more sulphides than previous section.	
126.05 TO 126.40	SERICITIC CHERTY TUFF «SERT+CHT»	Colour - buff-grey Grain Size - very fine grained Distinctive sericitic tuff with fine laminae of black cherty argillite and secondary quartz variable	65	Sericite	5-8% py	
126.40 TO 126.80	MAFIC TUFF «MT»	Colour - light grey - buff Grain Size - fine grained Fairly massive tuff. Minor intermixed argillite component but not as laminae		Weak sericite (-chlorite)	6% py.	
126.80 TO 127.50	SERICITIC CHERTY TUFF «SERT»	As 126.05 - 126.4	85 - 90			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
127.50 TO 129.35	MAFIC TUFF «MT»	As 126.4 - 126.8 Contact sharp at	70	Very weak sericite - chlorite	8% py.	
129.35 TO 148.48	SERICITIC CHERTY TUFF «SERT»	Colour - light grey-buff Grain Size - very fine grained Predominantly chert with at least 25% tuff component with local zones of black chert laminae. Very contorted with angles close to the core axis up to 60 degrees but definitely average = by the bottom of the hole. (Bedding?) Moderate amounts of secondary quartz. END OF HOLE	50	Moderate sericite throughout.	«3-4% py» 3-4% py only, mostly with qtz veins.	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD2992	33.55	34.50	0.95								25	85	7				
BCD2993	34.50	35.50	1.00								80	175	25	0.9	145		
BCD2994	36.50	37.50	1.00								25	26	10	0.4	40		
BCD2995	37.50	38.75	1.25								1100	47	15	0.7	115		
BCD2996	65.10	66.05	0.95								117	25	23	0.4	10		
BCD2997	66.05	67.55	1.50								44	24	9	0.2	5		
BCD2998	67.55	69.05	1.50								18	9	23	0.1	5		
BCD2999	69.05	70.55	1.50								18	10	20	0.1	5		
BCD3000	70.55	72.05	1.50								9	10	6	0.1	5		
BCD2965	72.05	73.55	1.50								25	52	8	0.1	5		
BCD2966	73.55	75.05	1.50								10	14	7	0.1	5		
BCD2967	75.05	76.55	1.50								21	24	9	0.1	5		
BCD2968	97.35	98.70	1.35								124	35	13	0.1	5		
BCD2969	99.60	100.50	0.90								152	44	363	0.5	5		
BCD2970	111.00	112.40	1.40								122	130	12	0.3	5		
BCD2971	113.35	114.95	1.60								83	118	30	0.5	5		
BCD2972	119.50	121.10	1.40								41	150	32	0.3	5		
BCD2973	122.30	123.80	1.50								38	48	33	0.3	5		
BCD2974	126.40	127.85	1.40								93	145	73	0.6	5		
BCD2975	127.85	129.35	1.50								239	195	90	0.9	5		

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 509.61N
EAST: 9407.12W
ELEV: 1652.10

ALTERNATE COORDS GRID: FIELD
NORTH: 94+ 0N
EAST: 5+ 0W
ELEV: 1657.00

COLLAR DIP: -60° 0' 0"
LENGTH OF THE HOLE: 209.40m
START DEPTH: 0.00m
FINAL DEPTH: 209.40m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: November 19, 1985
DATE COMPLETED: November 23, 1985
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: PVC PIPE IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
60.00	-	-60° 0'	ACID	OK		-	-	-	-	-	
90.00	-	-62° 0'	ACID	OK		-	-	-	-	-	
120.00	-	-62° 0'	ACID	OK		-	-	-	-	-	
150.00	-	-57° 0'	ACID	OK		-	-	-	-	-	
185.00	-	-57° 0'	ACID	OK		-	-	-	-	-	
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FRom TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 18.90	CASING «OB»					
18.90 TO 49.30	MAFIC PYRO-CLASTIC «MPYRO»	Colour - green-grey Grain Size - fine grained Tuffaceous to coarsely fragmental Bedding 20m = Fault gouge at 23m. Occ. cut by qtz-carb veins + sulphides. Fault gouge from 28.4 - 28.7 Frags are scoriaceous from 30-32 Bedding 32m = 48.8 - 49.3 Pyritic bed Contact very sharp at =	77 80 45	Strong carb at 21.5. Thereafter weak carb, minor chl-sericite. Darker, more chloritic sections increase down the hole. From approx. 43 they are very prevalent and accompanied by carb-qtz. veins. Approx 46m sericite starts to increase.	«2-3% py» 2-3% diss'd py. 23.1 - 23.3 25% gn, 15% sp, 5% cp, 10% py in qtz vein. 32.3 - 32.35 10% gn, 5% sp in qtz vein. 48.8 - 49.3 «30% py» 30% fine py in dark qtz-chl-ser rich bed.	
49.30 TO 51.10	SERICITIC TUFF WITH CHERT «SERT+CHT»	Colour - light grey to buff Grain Size - fine grained Still essentially volcanic but now strongly sericitic and containing minor chert. Some evidence of tectonic brecciation. Bedding 50m =	60	Strong sericite. Locally more chloritic.		
51.50 TO 60.25	MAFIC TUFF WITH MINOR CHERT «SERT+CHT»	Colour - grey Grain Size - fine grained Hybrid unit composed essentially of mafic tuff but with local chert and even argillite. Can be fragmental loally and includes a massive pyrite fragment - subrounded 1 1/2 x 1cm at 54.4! From 57-60 several sections appear to be finely fragmental, comprised of chips and grains - this may be caused by alteration. Bedding 55m = Contact marked by 2cm of gouge at =	74 50	Quite sericitic locally. Strong green mica to 57m imparts a bluish green hue to the rock. Pods of chlorite up to 1cm long are quite common too.	«15% py» 30% py in dark, almost buddy bed from 51.1 - 53.0 Elsewhere up to 15% py over 20-30cm, though generally sulphidic beds are thinner.	
60.25 TO 99.00	CHERT AND ARGILLITE «CHT+ARG»	Colour - grey/black Grain Size - aph. Grey, siliceous, fairly massive but very blocky to 63.5. Then quite argillitic a spotted appearance due to qtz-py knots to 67.3.			«10% py, minor sp-gn in qvs» 10% py as qtz-py knots. Locally minor sp-gn in qtz veins.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		67.3 - 70.4 Grey, siliceous chert, blocky and broken. 70.4 - 72.0 Black graphitic argillite with qtz-py knots 72.0 - 72.85 Silver Zone. Black, quite argillitic. 72.85 - 80.6 Still black, argillitic, locally cherty. 80.6 - 82.7 Grey chert, fairly massive. Occ. argillitic interbeds. Sulphide splotches throughout. 82.7 - 99.0 Chert and argillite breccia. Typical Rea Bx. Fault gouge at: 84-86 «FLT» 95-95.6 «FLT» 96.8-97.5 «FLT» Angle is highly variable	 55 60 63	Local green mica.	2-3% diss'd py. 5-10% py 72.0 - 72.85 15% py, 5% sp, 2% gn, 1% tet as blebs 72.85 5% py, traces sp. 80.6 - 82.7 15% py, 3% sp, 3% gn (no obvious tet) 2-3% py, locally up to 15% over a few cm.	
99.00 TO 104.00	FAULT ZONE «FLT»	Mainly clay gouge, minor quartz and graphite Contact gradational Bedding 104.5m =	 65			
104.00 TO 124.60	MUDDY TUFF «MUT»	Colour - grey Grain Size - fine grained Typical highly fissile muddy tuff. Only locally pyritic. Minor quartz-carb veins. Minor gouge. Angle becoming with depth = 116 - 117 Argillitic	 70 - 75		«3-4% py» 3-4% pyrite throughout. Locally up to 25% over 10cm or so.	
124.60 TO 127.80	QUARTZ VEIN «QV+SUL»	Colour - white Essentially bull quartz in minor chert. Good green mica in chert xenoith.			15% py, 4% gn, 2% sp, 1% tet, 1% cp as massive pods in quartz.	
127.80 TO 133.20	CHERT «CHT»	Colour - grey Grain Size - aph Massive, highly siliceous with some bull quartz Contact marked by gouge.	 80	Minor sericite with pyrite.	15% py as bands and veinlets. Generally very fine grained. 1-2% sp with a little tet over first metre (127.8 - 129).	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
133.20 TO 153.00	SERICITIC TUFF, CHERT & ARGILLITE <SERT+CHT+ ARG>	Colour - buff to grey to black Grain Size - aph - fine grained Interbedded buff and grey units consisting of chert/sericitic tuff and chert/argillitic Bedding 134m = Bedding 142.5m =	 75 88	Mod-strong sericite in tuff sections.	<5-8% py> 5-8% diss'd py. Occ. more in very thin beds.	
153.00 TO 209.40	CHERT AND ARGILLITE <CHT+ARG>	Colour - light grey and black Grain Size - aph Well bedded, locally brecciated chert with argillitic laminae. Highly contorted. Argillite is quite graphitic, strongly conductive Bedding 155m = |170.3 - 170.8| <FLT> Fault gouge. 172.1 - 174.6 Sericitic Bedding 181m = Bedding 193m = END OF HOLE	 80 80 79	 Sericitic beds increase towards the end.	 Local pyritic beds only. Occasional cubes of py.	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOL. CU PPM	AL ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
2755	23.00	23.40	0.40	.402	2.45	4.00	32.2	.10									
2756	51.10	52.60	1.50									36	17	46	0.6	40	
2757	72.00	72.85	0.85	.056	1.43	0.78	24.0	.20	.24	.03	.03						
2758	72.85	74.35	1.50									260	3250	1660	10.4	310	
2759	80.60	82.70	2.10	.020	0.38	1.36	29.0	.22									
2762	124.60	126.20	1.60									45	325	245	0.8	20	
	126.20	129.35	3.15	.09	1.04	0.08	41.0	.21									
2763	126.20	127.80	1.60	.073	1.74	1.43	26.5	.02									
2764	127.80	129.35	1.55	.104	0.31	0.14	56.0	.41	.30	.01	.02						
2765	129.35	131.20	1.85									24	146	200	1.0	5	

Sa...	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	%	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD 2979	25.00	28.00	3.00	48.69	14.83	5.19	13.50	1.68	0.13	12.11	0.32	1.66	0.55	.007	49	124	.014		

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REAL
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 566.81N
EAST: 9556.07W
ELEV: 1668.20

ALTERNATE COORDS GRID: FIELD
NORTH: 95+35N
EAST: 5+35W
ELEV: 1672.00

COLLAR DIP: -85° 0' 0"
LENGTH OF THE HOLE: 193.50m
START DEPTH: 0.00m
FINAL DEPTH: 193.50m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: PCV PIPE IN HOLE PULLED
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.00	-	-84° 0'	ACID	OK		-	-	-	-	-	
60.00	-	-83° 0'	ACID	OK		-	-	-	-	-	
90.00	-	-82° 0'	ACID	OK		-	-	-	-	-	
120.00	-	-76° 0'	ACID	OK		-	-	-	-	-	
150.00	-	-74° 0'	ACID	OK		-	-	-	-	-	
190.00	-	-70° 0'	ACID		poor etch	-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 6.10	CASING «OB»					
6.10 TO 126.10	MAFIC PYROCLASTIC «MPYRO»	Good fragmental with moderate qtz-carb veining. 14 =	55	Wk carb.	«3-4% py» <1% py.	
		Quite homogeneous weakly - moderately foliated. 35 =	58			
		Appox. 68. Becomes greener, more carb-rich with very abundant qtz-carb veining. 69 =	60	Prev. carb.	3-4% diss'd py.	
		83.5 =	72			
		96 =	63			
		{100} «more heterogeneous» Approx. 100m Starts to become more heterogeneous with increasing sericite, chlorite and pyrite. Distinctly altered footwall. 100 =	63	«strong chl-carb» Picking up. Initially wk-mod. sericite (carb-chl). Approx. 105 becomes strongly chl-carb altred with good carb rhombs.. Occ. green mica.	«py 10%; tr gn-sp» Py increasing to 10% locally to 25%. Gn-Sp-py (-cp) are common in minor amounts in qtz veins, especially 115.2-120. {121.9 - 122.0} «40% py» 40% py in bed.	
		122.2 - 125.1 Incipient stockwork with strong silicification (poss cherty?). Appears originally fragmental. Strongly suspect altered mafic.		Mod-strong sil-ser.	15-20% py, diss'd and as weak, incipient stockwork.	
		{125.1 - 126.1} «silver zone» Silver zone, slightly cherty, some gouge. contact very sharp at =	75		125.1 - 126.1 15% py, 2% sp, 1% cp, 1% gn <1% tet. as blebs.	
126.10 TO 162.50	HW SEDS. «WAK+MUD»	Colour - grey Grain Size - fine grained. Mainly greywacke with a few mudstone laminea. average approx. =	65		2-3% diss'd. py.	
		Approx. 136 Starts to grade into a more sericitic zone (as tuff content increases??). Definite chert component from 141-145. Also some quartz-pyrite veins. Poss. same as 120-126.1 (fold repeat).		138 - 141 Mod-strong sericite	5-10% py in sericitic zone, locally - 20%. Also occas. py patch in qtz veins. 5% py in wacke beds quite common.	All contacts here are stratigraphic, i.e., no faults, except perhaps at 144.8. In places it is definely sericitic sed, but there is also a definite chert and tuff component.
		144.8 Back to wacke/mudstone with a few fine breccia beds (chert/qtz clasts). 147 =	67	Sericite increases again approaching 162.5.	Approx. 160 several wacke beds have fine pyrite fragments.	
		162.1 - 162.4 Bull qtz. 158 =	67			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
162.50 TO 163.40	FAULT ZONE «FLT»	Colour - grey Grey muddy gouge with minor quartz.			«20-25% py» Initially 20-25% diss'd py, dropping off to 10% with depth.	
163.40 TO 183.80	MUDDY TUFF «MUT»	Typical muddy tuff with local gouge zones and abundant bull quartz. 60 = (165.6-168 is almost all quartz) Highly gouged near base. Contact appears gradational but is masked by gouge zones.	70			
183.80 TO 189.80	CHERT, CHERT BRECCIA MINOR ARGILLITE «CHT,CHT BX +ARG»	Colour - grey-black Grain Size - aph. Varies from fairly massive chert to distinct breccia with light and dark fragments up to 5cm+. Occ 'beds' of black chert may be frags too. 186 - 188.85 Cp-rich mineralized zone/bed. Upper contact gradational, lower sharp at	70 80		Sulphides throughout as matrix, fracture fillings and disseminated. Generally 10-15% py trace -2% sp, tr cp, gn tet. In addition: 186.45 - 188.85 15% py, 3% sp, 3% cp, 2% tet.	
189.80 TO 190.00	FAULT GOUGE «FLT»	Colour - grey Grey clay gouge.				
190.00 TO 193.50	SERICITIC TUFF AND CHERT «SERT+CHT»	Colour - buff Grain Size - fine grained. Mainly sericitic tuff with a minor cherty component. Pyritic throughout. END OF HOLE	66	Mod-strong ser.	10% diss'd py.	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
2771	69.51	-47.43	-116.94														
2766	122.20	123.70	1.50									17	58	30	0.4	5	
2767	123.70	125.10	1.40									44	163	28	0.6	10	
2768	125.10	126.14	1.04	1.04	.151	0.23	0.08	94.5	4.79	0.75	0.02	0.01					
2769	184.85	127.18	-57.67	186.45	.028	0.52	0.31	6.5	0.17	0.23							
2770	186.45	186.85	0.40	.629	4.49	2.30	26.0	0.23	0.24	0.01	0.01						
2771	186.85	188.35	1.50	.038	0.72	0.41	8.0	0.18	0.17								
2772	188.35	189.90	1.55	.016	0.47	0.20	4.2	0.21	0.32								

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	L.. %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD 2985	42.00	45.00	3.00	44.91	15.83	4.38	14.17	2.21	0.01	13.18	0.36	1.55	.005	.006	81	131	.006		
BCD 2986	72.00	75.00	3.00	39.05	9.97	19.53	6.21	1.79	0.37	7.56	0.29	0.66	.011	.005	39	52	.005		

MINNOVA INC.
HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 746.21N
EAST: 10031.92W
ELEV: 1494.90

ALTERNATE COORDS GRID: FIELD
NORTH: 100+ 0N
EAST: 7+55W
ELEV: 1492.00

COLLAR DIP: -55° 0' 0"
LENGTH OF THE HOLE: 68.80m
START DEPTH: 0.00m
FINAL DEPTH: 68.80m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: July 2, 1986
DATE COMPLETED: July 4, 1986
DATE LOGGED: 0. 0

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

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

CONTRACTOR: G&D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.00	-	-55° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 4.00	CASING «OB»					
4.00 TO 8.00	MAFIC VOLCANIC «MPYRO»	Colour - green Grain Size - fine grained Mainly mafic pyroclastic with abundant quartz. All very broken, often weathered. Contact lost in broken core.			Minor galena in qtz veins.	
8.00 TO 24.00	SERICITIC TUFF, MINOR CHERT «SERT+CHT»	Colour - light grey to buff Grain Size - fine grained Mainly sericitic tuff. Minor chert. Still numerous broken and weathered sections. especc. from 18 - 24. Contact lost in broken (and jumbled?) core. Bedding 17m = Fault!	70	Moderate to strong sericite.	«5-10% py» 5-10% py	18-24m 60% core recovery possibly mixed up.
24.00 TO 42.40	CHERT, SERICITIC TUFF «CHT+SERT»	Colour - black, grey - buff Grain Size - very fine grained Good "Rea Breccia" type chert is interspersed with sericitic cherty tuff sections. Chert is alternating black, grey . (Highly variable) Locally bedded, often breccia. Quite argillitic in places. Quite sharp at =	70	Intense sericite in tuff screens.	«5-8% py» 0-20% py averaging approx. 5-8% over the unit. 33.1 Minor tet-cp-sp over 1cm. (Silver Zone?)	
42.40 TO 58.00	MUDDY TUFF «MUT»	Colour - grey Grain Size - fine grained Initially contains a little chert. Becoming silty and then quite argillitic by 47m. Several gouge zones. Bedding 80m = Contact marked by qtz vein.	90		«30% py» 30% py over the first 1m decreasing to 3%. Argillitic section contains beds with up to 50% py mixed with barren sections. (Overall 10-15% py). Occas. traces sp.	
58.00 TO 68.80	GREY/WACKE & MUDSTONE «WAK+MUD»	Colour - grey Grain Size - mn. Quartz-wacke interbedded with well laminated, strongly folded mudstone. Wacke is pyritic, mudstone sericitic suggesting hydrothermal involvement. END OF HOLE		Weak-moderate sericite throughout.	3-5% py diss'd. Bed from 59.4 - 59.5 contains 30-40% fine py. {59.4-59.5} «30-40% py»	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t		COMMENTS
BCD4006	32.30	32.80	0.50								36	58	49		2.0	10	1120	
BCD4008	32.80	33.90	1.10								86	125	80		3.9	5	1700	

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	J2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD 4274	4.00	7.90	3.90	45.69	12.39	12.38	11.38	0.04	2.25	12.02	0.76	1.16	.064	.005	36	140	.022	98.16	

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 586.97N
EAST: 9713.65W
ELEV: 1593.70

ALTERNATE COORDS GRID: FIELD
NORTH: 97+ 0N
EAST: 5+75W
ELEV: 1595.00

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 191.70m
START DEPTH: 0.00m
FINAL DEPTH: 191.70m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: July 4, 1986
DATE COMPLETED: July 8, 1986
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
R99 LOG: NO

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

CONTRACTOR: G&D DRILLING
CASING: 300' of PVC PIPE IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.00	-	-86° 0'	ACID	ok		-	-	-	-	-	
60.00	-	-86° 0'	ACID	ok		-	-	-	-	-	
105.00	-	-88° 0'	ACID		suspect	-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 6.01	CASING «OB»					
6.01 TO 25.00	MAFIC LAPILLI-BLOCK TUFF «MPYRO»	Colour - med-dark green Lighter green fragments in a dark green (mafic) matrix. Badly broken up. Excellent fragmental texture, fragments are amygdaloidal with calcite qtz pyrite filling. Becoming less blocky from 13.1. 23 Badly broken up.		Moderate to strongly chloritized and sericitized overall with qtz sweats and carbonate on fractures. Fragments are sericitized. 13.1 Becoming less altered.	Trace - 5% pyrite disseminated and in brown ser-carb patches and assoc. with quartz sweats.	
25.00 TO 25.30	FAULT ZONE? «FLT»	Badly broken up, rusty.		Stringer-like pyrite to 5%.		
25.30 TO 25.60	CHERT/ QUARTZ «CHT+QTZ»	White. massive vein or massive chert		Green mica	3% pyrite in rusty veinlets, tr. sph? tet?	Assay sample BCD 4003 25.3 - 26.8.
25.60 TO 26.10	BRECCIA «BX»	Grey chaotic possibly debris breccia with fragments of metavol. argillite + chert. Rea Breccia? cut by quartz stringers.			Tr py + sph-tet-gal? in qtz stringers. Poss. aspy.	
26.10 TO 31.60	CHERT BRECCIA «CHT BX»	Mix chert breccia, qtz vein and extremely sericitized mafic vol. Matrix to breccia is pyritic sulphides. Lower contact broken up.		Stronger.	Tr tet?, sph, gal and up to 5% py in the chert breccia + qtz veins occurring as stringer like in fractures in Best at 27.7 - 28.0 tr tet.	Assay BCD 4010 26.8 - 28.2 BCD 4011 28.2 - 29.6 BCD 4012 29.6 - 31.6
31.60 TO 39.40	MAFIC LAPILLI-BLOCK TUFF «MPYRO»	Lapilli-block size frags (to 8cm) of amygdaloidal basalt, Amygdules filled with qtz + pyrite. Could be pillow breccia?? Cut by quartz veins at 32.4, 33.5, 34.2, 34.7.		Weak sericite + chlorite. 38m increasing sericite in both frags and matrix	Tr - 1% pyrite increasing to 3-5% py from 37.	
39.40 TO 43.80	QUARTZ VEIN CHERT BRECCIA «QV+CHT BX»	As above with 5-10% pyrite in fractures. Patches of aquamarine colour sericite altered vols? along with fragments of massive pyrite to 1cm. 41.7m increasing amount of volcanic fragments and volcanic in matrix.		Pale aquamarine staining or alt.	5-10% pyrite in fractures and stringer-like tr. tet?	BCD 4013 - 39.4 - 40.9 BCD 4014 - 40.9 - 42.3 BCD 4015 - 42.3 - 43.8

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
43.80 TO 70.00	MAFIC FRAGMENTAL LAPILLI-BLOCK «MPYRO»	Similar to above with fragments to 5cm. 47m very fresh rock matrix supported by abundant fragments. Could this be ash flow?		Fragments are epidotized but rock is otherwise unaltered. Feldspars are fresh. 47m - fragments are fresh.	Tr py. 57.8 - 15% py 59.1 - 1-3% cp, tet in qtz vein over 2cm.	
70.00 TO 80.70	MAFIC LAPILLI-BLOCK TUFF «MPYRO»	As above 77.7 mafic lapilli tuff intensely alt, starting to get chert/qtz fragments, transition zone to	45 - 50	Fragments becoming very epidotized. 73.8 matrix is being sericitized so 75 intense epidote + sericite	Tr py	IDP Weak-moderate alteration only.
80.70 TO 80.90	REA BRECCIA «CHT BX»	Argillite + chert breccia broke up & gouggy			Tr py	
80.90 TO 82.00	QUARTZ VEIN «QV»	White bull qtz with wallrock xenolights.				Broken and ground <50% recovery.
82.00 TO 83.20	FAULT GOUGE «FLT»	White clay gouge with chert fragments.			5% py with tr - 1% sp (tet) in cherty fragments.	
83.20 TO 89.45	QTZ SERICITE BRECCIA (SERICITIC CHERTY TUFF) «QTZ BX»	Well foliated, bands of chlorite, sericite + qtz 84.0-84.25 Badly broken up gouge zone 84.25-85.2 Banded chert (R Bx) with minor argillite 85.25-85.5 Qtz vein 85.5-87.2 foliated sericite qtz breccia as above 87.2-87.4 Qtz-py sweat 87.4-88.0 Grey banded chert with 20% py, tr sp/20cm		totally altered to qtz, sericite + chlorite totally altered to qtz sericite + chlorite	5% py along foliat. 3% py overall with sections up to 10% along foliations 20% py, tr sph/70cm at 87.60-87.80	Still stongly involved in the fault until 86.3m

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Banding ------	35			
		88.0-88.8 Foliated qtz ser bx with 5-10% py		Local green mica		Mainly sericitic tuff with chert bands
		88.8-89.45 Grey banded chert with py 10-20% in fracts				
89.45 TO 90.35	MASSIVE-SEMIMASSIVE SULPHIDE «MS-SMS»	{89.45-89.7} «MS, 50% tet» Massive 50% tetrahedrite with 10-15% Zn (lite) sphalerite			20% Zn	bottom ctc at 50 dip .15 true
		{89.7-90.35} «SMS, tet 20-30%» Semi-massive tetrahedrite (20-30%) with 5% light Zn sphalerite, tr cp, gangue in qtz.			10% Zn	at 50 dip .40 true
90.35 TO 90.45	BANDED GREY CHERT with PYRITE «CHT+py»	Grey chert, banded with sericite			«10-15% py» 10-15% pyrite	IDP Comment Not chert per se. More like sericitized sediment and/or Muddy tuff with a minor chert component. This coincides with the section in 53 (&65) much better
90.45 TO 105.90	CHERT + SERICITIC TUFF «CHT+SERT»	Mix dominantly sericitic tuff with minor chert + small (<20cm) white qtz veinlets	50	completely sericitized	5-10% pyrite along foliation etc. throughout, bleb of black tetrahedrite in qtz veins at 92.75, 100.3, 100.6, 100.8 101.0, narrow (3cm) band of py, cp, sph at 102.1-102.12, 102.3	
		99.6-102.5 Qtz vein with tr patchesr sericitic tuff				
		102.5-105.9 Lt-med grey tuff/wacke, v sericitize		w-mod sericite		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
105.90 TO 118.20	QUARTZ VEIN with inclusions SERICITIC TUFF «QV+SERT»	White, massive qtz vein with inclusions sericitic tuff. Along gouge at contact with inclusions. Major inclusion 108.4-110, 111.3-111.7, 115.3 Increase of sericite from 116. Sericite inclusions are beige coloured, foliated with py along foliation + becoming dominant & irregularly cut by q vein		Totally sericitic with patches with green mica	up to 10% pyrite in qtz vein in fractures, up to 30% pyrite in chert + sericitic zones at 108.4-108.8, 111.8,	
118.20 TO 121.10	ARGILLITE + QUARTZ BRECCIA «ARG+Q BX»	Argillite + qtz (black + white) breccia, foliated, brecciated contorted banding 118.8-119.2 Qtz vein + sericite	10		↓118.8↓ «30% py» up to 30% py	
121.10 TO 123.10	FAULT ZONE + HW SEDS? «FLT»	Argillite/wacke with qtz stringers 122.2-122.7 Qtz vein with minor argillite 122.7-123.1 Fault gouge				Possibly fault zone with a little bit of x sert that ruts out most of the seds + the mafics and outs the rest of this into the middle chert zone.
123.10 TO 125.50	GREY CHERT BRECCIA «CHT BX»	Bedded grey chert breccia. Shattered texture			5-10% py in fractures	
125.50 TO 133.50	CHERT + ARGILLITE BRECCIA «CHT+ARG » «BX»	Chert + Argillite bx with patches of sericitic tuff at 127.7-127.9, 128.2-128.8, 131.1-133 Otherwise extremely brecciated with chert frags in matrix of argillite. Bx is matrix supported			Pyrite as thin (<1cm) bands of massive py and in fracts and with green mica in sericitic tuff. Up to 30%/10cm locally	
133.50 TO 140.70	GREY CHERT SERICITE BX «CHT+SER » «BX»	Grey chert/sericite breccia, lt grey almost massive chert except for sericite along foliation.			10-15% pyrite as foliated band, in fracts, around frags	

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS. METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 648.90N
EAST: 9875.67W
ELEV: 1538.90

ALTERNATE COORDS GRID: FIELD
NORTH: 98+50N
EAST: 6+55W
ELEV: 0.00

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 169.50m
START DEPTH: 0.00m
FINAL DEPTH: 169.50m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: NO

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

CONTRACTOR: G&D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.00	-	-88° 0'	ACID	OK		-	-	-	-	-	
76.00	-	-87° 0'	ACID	OK		-	-	-	-	-	
167.00	-	-85° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 6.10	CASING «OB»					
6.10 TO 27.00	MAFIC VOLCANIC «MPYRD»	Colour - green-grey Grain Size - fine grained Broken, blocky, partially oxidized mafic. Moderately to well foliated and cut by numerous quartz-carb veinlets, often disrupted. Rare vague fragments. Bedding 14m = Bedding 23m =	 30 55	Bleaching associated with some of the broken zones.	Normally 1-2% disseminated pyrite, grading to 10% locally.	
27.00 TO 41.60	SERICITIC TUFF, MINOR CHERT «SERT+CHT»	Colour - pale grey to buff Grain Size - fine grained Pale coloured strongly sericitic tuff with abundant disrupted quartz and chert. Cut by qtz-chl-py stringers Averages but quite variable =	 55 - 65	Moderate to intense sericite.	«10-15% py» 10-15% py, mainly as reasonably well developed. Stockwork contorted by deformation. At 38.0 and 38.5 stringers contain blebs of cp with minor tet.	
41.60 TO 46.30	MASSIVE CHERT «CHT»	Colour - very pale grey Grain Size - aphanitic Massive to weakly laminated chert				47.4m of core represented by 0.45m between 43.9 and 46.3!
46.30 TO 48.70	SERICITIC TUFF «SERT»	Colour - buff Grain Size - very fine grained As 27 - 41.6 Contact knife sharp at =	 58 55			
48.70 TO 55.70	MASSIVE CHERT «CHT»	Colour - very pale grey Grain Size - aphanitic Massive to weakly laminated chert, pure almost straight quartz locally. Angle varies Highly contorted where laminated.		Nothing to alter!	«3-4% sul» 3-4% sulphides controlled by fractures. Generally py though minor sp, cp, gn and tet are seen.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
55.70 TO 57.30	SERICITIC TUFF, MINOR CHERT «SERT+CHT»	Colour - buff-grey Grain Size - very fine grained Intensely sericitic schist with cherty and/or quartz segregation. Contact knife sharp at =	70	Intense sericite	«15-20% py» 15-20% py	
57.30 TO 58.10	FAULT «FLT»	Muddy tuff gouge	45		10-15% py	
58.10 TO 58.80	MUDDY TUFF AND CHERT «MUT+CHT»	Colour - grey Grain Size - very fine grained Interlaminated muddy tuff and pale grey chert. Contact marked by 2cm gouge = (variable)		Nil.	10-15% py.	
58.80 TO 63.00	GRANULAR QUARTZITE «QITE»	Colour - grey Grain Size - m.g. Granular rock consisting of quartz, mica (carbonate?, barite?). Massive, unbedded with zones of quartz and/or silica flooding. Resembles massive barite but is definitely not. Occas. contains fragments of buff altered mafic.		Quite micaceous but not alteration per se.	Tetrahedrite with minor py, sp throughout. 58.8 - 59.2 traces tet. 59.2 - 60.2 1-4% averaging 2.5% tet. 60.2 - 62.0 87 tetrahedrite as blebs and finely diss'd. 62.0 - 63.0 <1% tetrahedrite.	
63.00 TO 75.95	QUARTZ VEIN «QV»	Largely bull white quartz with some sericitic tuff xenoliths. Quite broken, locally gouge. Contact sharp at =	68	Intense sericite in xenoliths.	Generally quite barren. Often pyritic in association with sericite xenoliths. {66.6-66.9} «5% tet,2% cp,3% py.1% sp» 5% tet, 2% cp, 3% py, 1% sp associated with xenoliths of the above unit.	
75.95 TO 76.35	SEMI-MASSIVE SULPHIDES «SMS»	Colour - grey Grain Size - fine grained Fairly massive, single bed grading from 25% sulphide to 100% sulphide down hole.			25-100% sulphide downhole. 50% average 25% sp, 10% gn, 10% tet, 5% py. Sp-gn increasing downhole.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
76.35 TO 76.40	LAMINATED CHERT «CHT»	Colour - grey Finely laminated pale grey chert with some py. Also some quartz present	70		«15% py» 15% py	
76.40 TO 118.00	CHERT, CHERTY MUDDY TUFF «CHT+MUT»	Colour - dark grey Grain Size - very fine grained Poorly but distinctly bedded grey chert mixed with classic muddy tuff. Quite homogeneous. Occ. qtz veins and sheared zones, but relatively minor. Bedding 77m =	65 - 70	None	Generally 5% to locally 10% py throughout with minor sp (to 1%), gn and rarely tet. Exceptions as listed. Base metals are often associated with qtz veinlets, or with zones cut by qtz. Py is also prevalent in muddy beds. 76.4 - 77.85 2-3% sp. 1-2% gn. <1% tet. 5% py. Tet and base metals generally decrease away from 76.4 79.6 - 79.8 10% sp, 8% gn, <1% tet 91.1 - 92.4 1-2% sp, 1-2% gn, 1% tet 96.3 - 103.25 2-5% combined sulphides usually 2-2-1 sp-gn-tet. Averages 3% sulphides 107.9 - 111.4 5% combined sulphides. Last 10cm is semi-massive sulphides in gouge zone.	
		Bedding 87m =	52			
		Bedding 93m =	53			
		Bedding 110m =	50			
118.00 TO 119.20	BLACK FAULT GOUGE «FLT»	Strong, black, graphitic gouge with some quartz fragments. Contact knife sharp at =	50		20% pyrite, last 20cm also contains ground up apy, cpy, gn and sp.	
119.20 TO 119.50	SEMI-MASSIVE TO MASSIVE SULPHIDES «SMS+MS»	20cm of black-grey cherty argillite with 30% sulphides followed by 10cm of massive sulphide	55		30% apy, 10% py, 2% tet, 4% sp, 4% gn.	
119.50 TO 135.30	MUDDY TUFF, ARGILLITE DETRITAL FLOW, VERY MINOR CHERT «MUT+ARG» «+DF+CHT»	Colour - grey to black Grain Size - fine grained Real mixed bag of muddy tuff, pyritic argillite, detrital flow, with mixed fragments of all types and very minor chert. Equivalent to HW muddy tuff. Becomes more tuffaceous towards the base. 134.0 - 134.2		Some sericitic alteration towards the base.	«10-15% py» 10-15% pyrite overall though locally 50% + in argillite beds. Traces of apy not uncommon.	124.7 - 125.5 Baritic? (somewhat similar to granular quartzite higher in the hole)

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Rea Breccia-type chert.				
135.30 TO 139.20	CHERT AND ARGILLITE «CHT+ARG»	Colour - grey and black Grain Size - very fine grained Typical "Rea Breccia" type chert highly variable			«5-10% py» 138.2 - 139.2 10% py, 1% apy overall 5-10% py	
139.20 TO 149.60	MASSIVE CHERT «CHT»	Colour - light grey Grain Size - aphanitic Very massive chert and/or pervasive silicification Latter appears to overprint Rea Breccia locally. More sericitic with Rea Breccia sections towards the base.			«3-4% py» 3-4%% py controlled by fractures.	
149.60 TO 169.50	SERICITIC TUFF AND CHERT «SERT+CHT»	Colour - buff to grey Grain Size - aphanitic Mainly moderately sericitic cherty tuff with occasional beds of Rea Breccia or massive chert. Bedding 153m = Bedding 169m = END OF HOLE	 40 30	Moderate sericite in tuff component.	«5% py» 5% py.	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t			COMMENTS
BCD4039	35.70	37.80	2.10								17	104	27		1.1	25			
BCD4040	37.80	38.80	1.00								255	410	104		3.0	35			
BCD4041	38.80	40.30	1.50								15	48	23		1.0	25			
BCD4042	48.80	50.30	1.50								320	590	290		4.5	20			
BCD4029	58.80	60.20	1.40	0.065	0.05	0.02	68.2	0.15	0.36	0.02									
BCD4030	60.20	62.00	1.80	0.760	0.54	0.04	850	1.34	0.68	0.06									
BCD4031	62.00	63.00	1.00	0.030	0.01	0.01	34.4	0.16	0.39	0.01									
BCD4032	63.00	65.10	2.10								68	220	220		10.0	160			
BCD4033	65.10	66.60	1.50								275	144	310		14.4	95			
BCD4034	66.60	66.90	0.30	0.570	0.86	0.05	394	1.62	1.04	0.05									
BCD4035	66.90	68.70	1.80								3100	325	120		69.0	105			
BCD4036	68.70	71.20	2.50								1520	163	26		102.0	160			
BCD4037	71.20	73.70	2.50								215	25	7		6.2	15			
BCD4038	73.70	75.95	2.25								760	132	48		47.0	70			
BCD4023	75.95	76.35	0.40	1.560	9.45	6.10	1800	3.05	1.56	0.23									
BCD4024	76.35	77.85	1.50	0.080	0.73	0.61	110	0.90	0.64	0.02									
BCD4025	77.85	79.40	1.55	0.108	0.52	0.29	59.6	1.52	1.02	0.01									
BCD4026	79.40	81.00	1.60	0.447	2.63	1.28	150	1.20	0.27	0.06									
BCD4027	81.00	82.20	1.20	0.623	1.09	0.51	175	0.86	0.45										
BCD4028	91.10	92.40	1.30	0.048	0.20	0.17	13.9	0.18	0.30										
BCD4043	96.30	97.80	1.50	0.210	2.38	0.93	62.0	0.19											
BCD4044	97.80	99.30	1.50	0.036	0.16	0.13	12.4	0.18											
BCD4045	99.30	100.25	0.95	0.231	0.25	0.26	81.5	0.01											
BCD4046	100.25	101.70	1.45	0.860	2.03	0.94	250	0.75											
BCD4047	101.70	103.25	1.55	0.062	0.41	0.16	20.6	0.23											
BCD4048	107.90	109.30	1.40	0.480	1.07	0.65	283	0.26											
BCD4049	109.30	111.40	2.10	0.178	1.03	0.34	60.2	0.17											
BCD4050	118.00	119.20	1.20	0.142	0.35	0.24	4.3	0.21											
BCD4051	119.20	119.50	0.30	0.297	1.22	1.98	15.8	4.42	0.02	14.20									
BCD4052	124.70	125.50	0.80								23	27	21		1.4	15	14	600	
BCD4053	138.20	139.20	1.00								110	400	162		3.7	440	5800	1880	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
140.70 TO 142.20	CHERT + ARGILLITE «CHT+ARG»	Not so brecciated but still with frags of chert in argillite. Still with minor sericitic tuff			Up to 10% pyrite along fol, in fracts etc.	
142.20 TO 168.80	CHERT + SERICITIC TUFF with ARGILLITE «CHT+SERT»	Chert + sericitic tuff with minor argillite to 20% Overall well foliated/banded, but some brecciated sections 148-150, and some section with possible greywacke interbeds ie at 153.0m 156.5-160.5 Well banded argillite/chert/sericite 160.5 Chert, sericite + pyrite (5%) + argillite breccia with rounded + stretched chert clasts. Also argillite clast 166.5 Breccia as above with contorted bedding and strong argillite matrix	60 70 60	Sericite matrix to frags + defining foliation	Still up to 10% pyrite in patches, fractures, and around fragments. 154.8 py 20%/10cm 156.35 py 15%/20cm	
168.80 TO 191.80	CHERT + SERICITE TUFF BRECCIA «CHT+SERT» «RI»	Mix of sericite tuff (beige-yellow) + chert white/grey becoming bluish Lots of bull quartz from 185-191 END OF HOLE	50	Bluish sericite colour to chert apparent after 172.5	py 1-5% overall patches (5cm of up 10% py	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t			COMMENTS
BCD4009	25.30	26.80	1.50								36	475	265		2.1	30	2100		
BCD4010	26.80	28.20	1.40								24	370	610		2.6	25	1780		
BCD4011	28.20	29.60	1.40								30	480	635		2.3	35	3700		
BCD4012	29.60	31.60	2.00								44	112	200		2.3	30	1350		
BCD4013	39.40	40.90	1.50								950	62	69		4.7	25	1100		
BCD4014	40.90	42.30	1.40								71	57	87		1.9	35	3700		
BCD4015	42.30	43.80	1.50								94	103	107		2.2	50	2440		
BCD4111	87.00	88.10	1.10	.01	.01	.01	2.2	0.4											
BCD4018	88.10	89.45	1.35								285	1100	870		8.0	60	7100		
BCD4016	89.45	89.70	0.25	14.52	11.5	11.2	3620	2.81		1.39									
BCD4017	89.70	90.35	0.65	7.35	6.4	5.32	2350	4.11		0.83									
BCD4019	90.35	92.00	1.65								57	81	116		3.2	25	22000		
BCD4020	92.00	93.90	1.90								73	88	134		5.7	55	19000	260	
BCD4021	99.60	101.00	1.40								1200	180	94		113.0	230	18700	43	
BCD4022	101.00	102.50	1.50								350	275	92		27.0	65	7300	210	

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4257	6.00	8.50	2.50	49.31	14.98	3.65	12.60	2.29	0.05	13.31	0.27	1.59	.028	.005	80	132	.009	98.09	
BCD4258	43.80	46.60	2.80	46.15	15.25	7.26	11.77	3.34	0.03	12.51	0.26	1.47	.005	.005	98	92	.005	98.05	
BCD4259	70.00	72.80	2.80	47.5	15.36	5.75	11.87	2.82	0.01	12.87	0.18	1.59	.005	.005	100	88	.005		

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REAI
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 588.09N
EAST: 9714.33W
ELEV: 1593.70

ALTERNATE COORDS GRID: FIELD
NORTH: 97+ 0N
EAST: 5+75W
ELEV: 1595.00

COLLAR DIP: -55° 0' 0"
LENGTH OF THE HOLE: 92.70m
START DEPTH: 0.00m
FINAL DEPTH: 92.70m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: July 18, 1986
DATE COMPLETED: July 20, 1986
DATE LOGGED: July 20, 1986

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

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

CONTRACTOR: G&D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
50.00	-	-55° 0'	ACID	OK		-	-	-	-	-	
90.00	-	-57° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 0.00 TO 9.10	CASING					
9.10 TO 63.40	MAFIC PYROCLASTIC <MPYRO>	Colour - green Grain Size - fine grained Good lapilli to block-size fragments, lighter than matrix, well stretched 14.0 - 17.1 Very blocky with quartz veining. Overall pretty blocky and fractured with surface weathering on fractures down to approx. 29m. Remarkably homogeneous, until the last couple of metres. Then the overall fragment size decreases, qtz content increases and rock takes on a greyer colour. Bedding 50m =	65 75	Nil	<1-2% py> 1-2% py associated with qtz veinlets. Rare traces of gn. 60.8 - 60.9 <1% tet in qtz vein	14.0 - 17.1 50% recovery.
63.40 TO 74.70	SERICITIC TUFF AND CHERT <SERT+CHT>	Colour - grey to buff Grain Size - very fine grained 63.4 - 64.2 Grey, massive to brecciated chert with minor argillite matrix Contact sharp at = 64.2 - 67.4 sericitic tuff with a little chert. A few yellow altered mafic fragments. Moderate quartz veining. 67.4 - 71.0 grey to black poorly bedded chert with lesser sericitic tuff. Abundant quartz. Badly broken and ground. 71.0 - 74.7 sericitic tuff with minor chert and abundant quartz. Badly broken with ground sections.	72 70	Strong sericite	1-2% diss'd py. 73.8 - 74.1 Possibly 2% tet, 2% cp, 3% py (minor gn-sp) in qtz vein. 10% py elsewhere	67.4 - 71.0 60% recovery 73.8 - 74.1 completely ground
74.70 TO 75.70	QUARTZ AND FAULT GOUGE <QTZ+FLT>	Pyritic clay fault gouge with lots of white bull quartz. Badly broken and ground.			30% py in gouge, 0 in qtz.	74.7 - 75.7 40% recovery

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
75.70 TO 79.90	"MUDDY TUFF" (SERICITIC ARGILLITE) «MUT»	Actually sericitic tuffaceous argillite with remnant bedding apparent. Coarser beds consist of small amphibole crystals, often gone to chlorite, in a pale sericitic matrix. Otherwise they reseemble wacke beds!	70	Moderate sericite. Minor chlorite, often as veinlets.	«3-4% py» 3-4% pyrite, both disseminated and in veinlets with quartz. Occasional coarse apy crystals, apparently assoc. with the wacke-like beds and qtz veinlets. No concentration of them. Also traces of sp.	
79.90 TO 84.40	ARGILLITE «ARG»	As above without the sericitization. Amphibole "beds" still present but not chloritized.	70 - 75		Still occasional apy crystal and 3-4% py. Tr sp.	
84.40 TO 85.40	FAULT «FLT»	Sediment gouge and badly broken core.	70			25% recovery.
85.40 TO 92.70	WACKES AND ARGILLITE «WAK+ARG»	Colour - grey Grain Size - mg. Mainly quite coarse. Wacke with minor muddy argillite laminae. Starts to become sericitic beyond 90m. END OF HOLE	75	Sericite picks up beyond 90m to quite strong by 92m.	«10-15% py» Occasional pyritic beds. Rare apy crystals in qtz veins. Also trace sp, cp with it. 10-15% py in sericitic section.	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCB4091	73.80	74.10	0.30	0.028	0.02	0.32	16.1	0.25									

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 684.12N
EAST: 9808.56W
ELEV: 1571.20

ALTERNATE COORDS GRID: FIELD
NORTH: 97+95N
EAST: 6+75W
ELEV: 1580.00

COLLAR DIP: -60° 0' 0"
LENGTH OF THE HOLE: 168.60m
START DEPTH: 0.00m
FINAL DEPTH: 168.60m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: July 20, 1986
DATE COMPLETED: July 22, 1986
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: NO

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

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

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
80.00	-	-62° 0'	ACID	OK		-	-	-	-	-	
160.00	-	-62° 0'	ACID	OK		-	-	-	-	-	
196.50	219°30'	-62° 0'	TRO-PARI	ok		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.70	CASING					
0.00 TO 3.00	CHERT,	Initially chert, cherty breccia and granular		Moderate sericite	5-10% py in beds.	
TO 3.70	«OB»					
3.70 TO 72.90	MAFIC PYRO-CLASTIC «MPYRO»	Colour - green Grain Size - fine grained Good, unaltered mafic lapilli and block tuff. Scoriaceous fragments are slightly lighter than the matrix in colour. Massive to very weakly foliated. A few quartz-carb veinlets. 23.3 - 23.4; 24.8 - 25.1 Fault gouge. Identical rock types on both sides. {45 - 50} «FLT» Quite blocky and broken. Approx. 60m Quartz-carb veins and knots becoming abundant. May be weak equivalent to sericitic tuff. {69.8 - 71.2} «QV» Bull quartz Sharp contact at	80 80 75	Nil. Approx 50m Slight bleaching becomes noticeable as sericite picks up. By 60m this is weak to moderate.	Trace py gradually increasing to 1/2% by 35m. Trace gn in qtz/carb veinlet at 45.5m. Likewise at 47.8 (+sp) 49.8 - 50.8 2% gn, <1% cp trace tet in qtz-carb veinlet running along core axis	45 - 50 75% recovery
72.90 TO 74.10	BLACK CHERTY ARGILLITE AND TUFF «CHT ARG»	Colour - black Grain Size - very fine grained Cherty argillite breccia with tuff screens.				5% py
74.10 TO 74.20	FAULT GOUGE «FLT»					
74.20 TO 77.00	MAFIC TUFF «MT»	Colour - green Grain Size - fine grained Massive, probably tuffaceous. Contact sharp at	80 78	Minor chlorite	5% diss'd py	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
77.00 TO 80.20	CHERT AND CHERTY ARGILLITE «CHT+ARG»	Colour - grey to black Grain Size - aphanitic Mainly grey cherty and black cherty argillite. 77.3 - 78.4 Strong component of granular, crystalline carbonate or sulphate. Increasing sulphide content downhole. 78.0 - 78.4 is almost semi-massive sulphide. 79.4 - 79.9 Grey mafic tuff screen or mafic dyke	70		Increasing from 3% py with traces of gn sp, cp and tet to 50% sulphides with 20% py, 15% sp, 10% gn, 3% cp and 2% tet over 0.4m. (78 - 78.4) Elsewhere 3% py with local traces of tet, sp, gn and cp.	
80.20 TO 90.50	MAFIC TUFF, LAPILLI TUFF, MINOR CHERT «SERT+CHT»	Colour - grey to buff Grain Size - fine grained Mainly mafic tuff with rubbly tops to beds in which some chert (occ. cherty argillite) has been deposited. Moderate quartz approx. 82.6 becomes highly sericitic with development of weak incipient stockwork. Several gouge zones from 87.6 - 90.3. Contact sheared but sharp.	65 - 70 70	Strong sericite from 82.6 - 90.5	Averages about 5% py throughout.	
90.50 TO 129.00	MUDDY TUFF MINOR CHERT «MUT+CHT»	Colour - grey Grain Size - very fine grained 5cm of grey, laminated chert followed by fairly classic muddy tuff with a minor chert component and silica flooding. Silica flooding is usually accompanied by sphalerite and tetrahedrite 99.65 - 100.65 Silica flooded zone. {104.25 - 105.6} «SMS» Semi-massive sulphide bed. Fg-Mg finely bedded with granular sulphides in a qtz-sericite matrix. 105.6 - 105.8 Veiny quartz with massive sericite margins. 105.8 - 107.0 Granular sulphide rich bed, strongly quartz flooded. {107.0 - 107.85} «SMS» Semi-massive sulphide bed. Very similar to 104.25 - 105.6 {107.85 - 108.3} «SMS» Semi-massive sulphide bed. as 104.25 - 105.6 108.45 - 117.4	65 65 65 76		90.5 - 97.8 Local minor sp, tet. 97.8 - 99.65 2% sp, 1-2% tet. 99.65 - 100.65 10% tet, 2-3% sp, 1-2% gn, 1% apy + needles of unknown mineral. 100.65 - 104.25 2-3% sp, <1% tet. 104.25 - 105.6 20% py, 15% tet, 10% sp, 5% gn 105.6 - 105.8 2-3% tet as blebs 105.8 - 106.4 20% tet, 10% sp, 10% gn, 5% py 106.4 - 107.0 2% tet, 1-2% sp 107.0 - 107.85 20% tet, 10% py, 10% sp, 5% gn, 5% apy 107.85 - 108.3 40% py, traces sp, tet 108.3 - 108.45 25% tet, 25% sp, 10% py	104.25 - 108.45 (4.2m) (3.95mT) 12.5% tet, 7.5% sp

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Homogeneous muddy tuff with minor chert. Occasional qtz-sulphide veinlets provide all but the pyrite. Bedding 113m = 117.4 - 119.45 Strong quartz-pyrite flooding of muddy tuff. 119.45 - 121.3 Even stronger quartz-pyrite flooding. 121.3 - 129 Muddy tuff becoming more and more sheared with depth. Rare sulphide - quartz veinlets. Bedding 124m =	80 72		108.45 - 117.4 20% py (locally more) 1/2% tet, 1% sp average 117.4 - 119.45 35-40% py, 4% tet, 4% sp, 2% gn 119.45 - 121.3 20% py, 10-15% tet, 10% sp, 5-10% gn, traces cp 121.3 - 129 20-25% py, locally as semi-massive beds	
129.00 TO 131.40	FAULT GOUGE AND QUARTZ «FLT+QTZ»	Mainly muddy tuff gouge with minor chert and about 25% white bull quartz Variable angles			5% py, locally more	
131.40 TO 132.70	CHERT AND CHERT BRECCIA «CHT+» «CHT BX»	Colour - grey-black Grain Size - aphanitic Interbedded massive chert with Rea Breccia	75	Some sericite in rare tuff screen.	5-10% py	
132.70 TO 146.80	MUDDY TUFF «MUT»	Colour - grey Grain Size - fine grained Well foliated muddy tuff with remnant mafic pyroclastic/sediment textures. 35-50 degrees consistently. Almost parallel to CA at 140m! At 139.2, abruptly changes to weakly-moderately foliated at	35 to 50 70	Sericite and clay throughout	«15-20%» 15-20% py as beds, fragments and disseminated.	Obviously strongly folded.
146.80 TO 147.00	FAULT GOUGE «FLT»	Grey muddy tuff gouge				
TO 168.60	CHERTY ARGILLITE & SERICITIC TUFF «CHT+» «CHT ARG+» «SERT»	quartzite with muddy pyritic beds becoming good chert breccia with a mod-strong sericitic tuff component. Occasional gouge zones. Last few metres are darker, non-sericitic. Rea Breccia = type chert. END OF HOLE	75		5% py	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCS4132	49.80	50.80	1.00	.018	.08	.07	2.9	.13		.01							
BCD4070	77.30	78.00	0.70	0.074	1.62	0.54	4.8	0.01		0.16							
BCD4071	78.00	78.40	0.40	0.30	5.64	3.27	22.8	0.16		0.01							
BCD4072	97.80	99.65	1.85	0.056	0.52	0.36	47.6	0.3	0.12	0.01							
BCD4073	99.65	100.65	1.00	0.99	1.48	1.64	612	3.51	0.42	0.26							
BCD4074	100.65	102.45	1.80	0.0185	1.458	0.60	18.6	1.06	0.02	0.5							
BCD4075	102.45	104.25	1.80	0.028	0.37	0.24	16.3	0.22	0.08	0.15							
BCD4076	104.25	105.60	1.35	1.18	6.02	4.48	1040	1.41	0.14	0.87	0.67						
BCD4077	105.60	106.40	0.80	1.89	1.49	0.61	1950	2.11	0.12	0.6	1.06						
BCD4078	106.40	107.00	0.60	0.498	1.74	2.81	530	0.48	0.04	0.65	0.32						
BCD4079	107.00	107.85	0.85	1.23	9.1	7.6	960	1.64	0.20	1.29	0.70						
BCD4080	107.85	108.30	0.45	0.02	0.15	0.55	27.8	0.04	0.01	1.85	0.01						
BCD4081	108.30	108.45	0.15	0.11	7.85	1.75	238	0.43	0.05	1.18	0.06						
BCD4082	108.45	110.60	2.15	0.024	0.25	0.25	28.4	0.5		0.85							
BCD4083	110.60	112.30	1.70	0.294	0.44	0.44	97.3	0.45		0.30							
BCD4084	112.30	114.00	1.70	0.038	0.03	0.04	24.2	0.20		0.21							
BCD4085	114.00	115.70	1.70	0.012	0.04	0.12	9.7	0.16		0.40							
BCD4086	115.70	117.40	1.70	0.012	0.01	0.01	8.0	0.21		0.30							
BCD4087	117.40	118.70	1.30	.415	.57	.36	288	.78	.23	.01							
BCD4088	118.70	119.45	0.75	.086	.23	.24	63.8	.20	.18	.15							
BCD4089	119.45	121.30	1.85	.84	3.20	1.40	270	.40	.38	.16							
BCD4090	121.30	122.80	1.50	.014	.01	.01	8.0	.18		.35							

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCB4175	4.50	7.60	3.10	43.71	13.64	11.27	12.07	2.5	0.02	12.34	0.29	1.58	.112	.006	88	82	.009	97.54	
BCB4176	35.00	38.20	3.20	47.09	14.08	9.81	10.92	2.21	0.03	11.92	0.27	1.43	.081	.006	84	80	.005	97.86	
BCB4177	69.50	72.70	3.20	50.09	11.29	10.73	12.54	0.04	1.25	9.32	0.89	1.58	.051	.012	92	196	.022	97.82	
BCB4178	80.20	84.60	4.40	62.24	18.34	0.27	4.05	0.27	4.19	7.38	0.48	0.94	.169	.010	32	120	.005	98.33	

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 685.61N
EAST: 9808.62W
ELEV: 1571.30

ALTERNATE COORDS GRID: FIELD
NORTH: 97+75N
EAST: 6+75W
ELEV: 1580.00

COLLAR DIP: -85° 0' 0°
LENGTH OF THE HOLE: 221.60m
START DEPTH: 0.00m
FINAL DEPTH: 221.60m

COLLAR GRID AZIMUTH: ° ' °

COLLAR ASTRNOMIC AZIMUTH: 45° 0' 0°

DATE STARTED: July 22, 1986
DATE COMPLETED: July 24, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: R&D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.00	-	-84° 0'	ACID	OK		-	-	-	-	-	
100.00	-	-86° 0'	ACID	OK		-	-	-	-	-	
140.00	-	-86° 0'	ACID	OK		-	-	-	-	-	
183.00	-	-87° 0'	ACID	OK		-	-	-	-	-	
110.00	0° 0'	-90° 0'	TRO-PARI	ok		-	-	-	-	-	
180.00	139° 0'	-84° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 0.00 0.00 0.00 0.00 0.00 TO 3.00	CASING <QB> CASING					
3.00 TO 89.80	MAFIC PYRO- CLASTIC <MPYRO>	Colour - green Grain Size - fine grained Good massive mafic pyroclastic - block and lapilli size frags, matric supported {28.0 - 28.2} <FLT> ground core - fault? Bedding 30a = 25 - 35 Quite broken, blocky Bedding 53a = Foliation increases to moderate by 60a. Fragments are still present but less obvious, generally smaller and significantly stretched Bedding 68a = Contact marked by 5 cm of qtz with minor gouge	58 60 50 42	Weak chlorite-sericite becoming noticable with increase in foliation but only beyond approx. 70a. Essentially very little alteration all the way to the contact	Trace py increasing gradually to approx 1%.	
-3.00 TO 0.00						
89.80 TO 177.00	CHERT, CHERTY ARGILLITE AND (SERICITIC) TUFF <CHT+> <CHT ARG+> <SERT>	Colour - grey black Grain Size - very fine grained Bedded and brecciated chert and cherty argillite with tuffaceous screens. Locally graphitic along slips - but can be close to parallel locally = From approx. 110a, start to get an occasional pyritic bed. Chert is more massive and tuff component reduced to zero. Good Rea Breccia zones present. {124 - 124.5} <FLT> Fault gouge. Similar rocks on either side. Bedding 127a = {137.5 - 142.5} <SMS> Well bedded sections with semi-massive pyrite beds makes up about 40% of the section. These beds are massive to finely laminated, very clearly defined and consist of fine crystalline pyrite with minor argilite and varying proport-	40 to 55 45	Minor sericite in tuff screens initially becoming stronger with depth Beds - up to 25cm thick containing up to 85% pyrite. Chert between contains 5-10% diss'd pyrite. No BM's or PM sulphides noted.	3-4% py. Rising to 5-8% with depth. Rare traces of sp 95.0 - 95.4 2% sp, 2% gn, 1% tet. Veining Distinctly cherty - Rea Breccia type - rather than muddy tuff with chert. Leucoxene after ilmenite? magnetite?	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		ions of a purplish-grey to brown? leucoxene?				
		Bedding 45m =	65			
		Interbedded with these are light grey chert and chert breccia beds and black cherty argillite.				
		142.5 - 149.0		20-25% pyrite concentrated in specific beds and laminae.		
		Mostly good Rea Breccia type laminated chert and breccia with numerous pyritic beds. Frequent gouggy zones.		Local traces sp, tet, gn		
		149.0 - 149.7 «FLT»				
		Fault gouge. Grey, muddy.	45	155.5 - 155.8		
		(as fol)	to	4% sp, 4% gn (tr tet) in qtz vein		
		149.7 - 159.6	65	158.4 - 158.5 - tr sp		
		Mostly massive grey chert with some darker grey, slightly more argillitic beds and pyritic beds		158.6 - 158.9 - tr tet, sp		
				159.2 - 159.4		
		as listed.	45	pyrite-argillite-leucoxene beds (65)		
				2% in rest of these, mainly concentrated in the last 2-3 cm	Occasional short sections look quite muddy (as in muddy tuff) but never really loses its chert dominance.	
		159.6 - 177.0		159.6 - 163.1		
		Mainly good Rea Breccia type chert and cherty argillite with a few massive beds and pyritic beds		5-10% py		
		From 163.1 pyritic beds make up approx 50% of the section (to 175)		163.1 - 175		
				35% py as strongly diss'd to semi-massive concentrations in distinct beds or as a matrix to chert fragments.		
		Bedding 161 =	48			
		Bedding 165	49	Only rare traces of sp-gn-tet assoc. with quartz.		
		Bedding 169	49			
		Bedding 173	50			
		Bedding 177	38	Except:		
				172.8 - 173.6		
				4% sp, 2% tet, 3% gn in pyritic beds and with quartz		
				175 - 177		
				10% py often as qtz-py knots	Knots appear to be qtz-py veinlets that have been tectonically broken up. Hence paragenetic sequence chert - qtz-py deformation.	
		Contact gradational.				
147.00 TO 147.20						
168.60 TO 190.20						

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
177.00 TO 208.10	MUDDY TUFF MINOR CHERT <MUT+CHT>	Generally fairly typical muddy tuff with good chert beds interbedded or interfolded with it. Bedding 179 = Bedding 182 = Strong foliation, tectonic brecciation and local very shallow core angles indicate a fold hinge close by. Bedding 182-183 foliation swings thru and back the other way Bedding 185 = Bedding 192 = 193.4 - 195.0 Massive black chert bed with tygnatic qtz veinlets and qtz-py veinlets. 195.0 - 208.1 Strong tectonically brecciated muddy tuff with abundant silica-sulphide beds and flooded zones Bedding 198 = Bedding 201 = Bedidng 205 =	 45 25 0 25 30 25 40 25 40	Typical muddy tuff sericite-clay	{177.0 - 179.7} <40-50% py> 40-50% py, good leucoxene in fairly massive bed or series of beds. 179.7 - 193.4 15% py, tending to concentrate in certain beds. Local qtz veinlets with sp-tet-gn associated. 5% py in qtz veinlets. 195.0 - 208.1 20% py, 2% sp, 2% tet. 1-2% gn in siliceous beds and/or flooded zones. Definitely remobilization going on, but mineralization probably originally stratiform.	
208.10 TO 208.70	FAULT <FLT>	Grey, muddy gouge with quartz.				
208.70 TO 221.60	CHERT AND SERICITIC TUFF <CHT+SERT>	Interbedded grey to black chert with weakly to moderately sericitic tuff. Sheared at shallow angle to CA approx. 212m Bedding 212 = 215 = 221 = END OF HOLE	 20 55 45	Weak to moderate sericite in tuff.	3-4% py	"Middle" Chert
221.60 TO 234.50						

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD4092	95.00	95.40	0.40	.013	.07	.07	4.2	.01		.01							
BCD4093	139.40	141.00	1.60								60	66	65	1.9	25		
BCD4094	154.80	156.70	1.90	.03	.05	.20	14.0	.01									
BCD4095	156.70	158.30	1.60	.016	.10	.09	6.0	.01									
BCD4096	158.30	159.70	1.40	.012	.29	.06	4.2	.01									
BCD4097	169.80	171.30	1.50								125	86	192	3.9	10		
BCD4098	172.60	173.60	1.00	.091	1.23	.73	36.0	.01									
BCD4108	185.40	186.90	1.50	.116	.41	.21	50.0	.02		.01							
BCD4109	186.90	188.10	1.20	.027	.01	.02	10.3	.01		.01							
BCD4110	191.00	192.40	1.40	.012	.27	.16	6.3	.02		.03							
BCD4099	195.00	196.50	1.50	.045	.53	.16	12.3	.01		.01							
BCD4100	196.50	198.20	1.70	.23	2.41	.92	45.0	.08		.01							
BCD4101	198.20	199.60	1.40	.057	1.83	1.32	19.0	.16		.01							
BCD4102	199.60	201.00	1.40	.088	4.20	1.74	34.0	.07		.01							
BCD4103	201.00	202.50	1.50	.038	1.96	1.16	15.9	.06		.01							
BCD4104	202.50	204.10	1.60	.023	1.18	.84	18.0	.04		.01							
BCD4105	204.10	205.90	1.80	.028	1.73	.85	20.1	.29		.02							
BCD4106	205.90	207.40	1.60	.078	1.05	.72	32.0	.20		.01							
BCD4107	207.40	208.10	0.70	.044	.86	.07	16.2	.17		.01							

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4179	4.60	7.70	3.10	48.82	13.44	10.60	10.26	2.67	0.02	10.59	0.27	1.35	.043	.005	92	78	.005	98.07	
BCD4180	41.00	43.80	2.80	46.6	14.07	9.08	12.44	1.79	0.01	12.05	0.28	1.81	.012	.010	88	88	.005	97.97	
BCD4181	80.70	84.00	3.30	48.72	12.91	8.91	11.41	2.69	0.10	11.36	0.32	1.61	.015	.007	66	84	.005	98.05	

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS. METRIC UNITS: X

PROJECT NAME: SAN
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SANATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 756.95N
EAST: 9961.87W
ELEV: 1523.20

ALTERNATE COORDS GRID: FIELD
NORTH: 99+25N
EAST: 7+25W
ELEV: 1530.00

COLLAR DIP: -65° 0' 0"
LENGTH OF THE HOLE: 175.90m
START DEPTH: 0.00m
FINAL DEPTH: 175.90m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: July 24, 1986
DATE COMPLETED: July 26, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
65.00	-	-63° 0'	ACID	OK		-	-	-	-	-	
120.00	-	-61° 0'	ACID	OK		-	-	-	-	-	
170.00	-	-58° 0'	ACID	OK		-	-	-	-	-	
175.00	252° 0'	-57° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 0.00 0.00 TO 9.10	CASING CASING «OB»					
9.10 TO 37.30	MAFIC PYRO- CLASTIC «MPYRO»	Colour - green Grain Size - fine grained Very weakly foliated, well preserved lapilli and block pyroclastic. Fragments are distinctly vesicular in places and, as usual, are lighter in colour than the matrix. Bedding 12m = Bedding 24m = A few qtz-carb veinlets. Fragments become slightly lighter in colour with depth. Contact ground.	 85 75	Little if any.	1% diss'd py.	16 - 25 Quite blocky with oxidized fractures.
37.30 TO 46.80	SERICITIC TUFF «SERT»	Colour - green to yellow Grain Size - fine grained Strongly foliated pyroclastic with moderate alteration and a distinct increase in quartz veining. May also have a chert component. Bedding 40m = Contact knife sharp at	 73 74	Moderate to strong sericite with chlorite bands and a little green mica	«5% py» 5% diss'd py. Local very weak incipient stockwork.	
46.80 TO 50.90	CHERT «CHT»	Colour - dark grey Grain Size - aphanitic Weakly laminated chert and chert breccia with minor cherty argillite. A few weakly altered tuff screens. Contact ground.			<1% py	
50.90 TO 61.40	SERICITIC TUFF «SERT»	Colour - green-yellow Grain Size - fine grained Much as 37.3 - 46.8 with well foliated, moderately to strongly foliated tuff with a minor chert component. Bedding 53.5m = 59.6 - 60.0 Chert and cherty argillite Contact sharp at	 75 70	Moderate-strong sericite becoming weaker with depth.	5% 59.7 - 63.1 80% recovery	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
61.40 TO 61.60	CHERT «CHT»	Colour - dark grey Grain Size - aphanitic Brecciated chert with qtz veining Contact not seen.				
61.60 TO 67.00	QUARTZ - ARGILLITE FAULT ZONE «QTZ+ARG» «FLT»	Colour - white and black Grain Size - very fine grained Very broken up with bull quartz and sheared argillite with gouge zones Contact ground		10% py, both in quartz and argillite	50-60% recovery	
67.00 TO 78.60	MAFIC PYRO-CLASTIC «MPYRO»	Colour - grey Grain Size - fine grained Weakly foliated mafic with abundant quartz-carb flooding Bedding 69m = Contact marked by shear zone at =	 67 75	Weak to locally moderate sericite, becoming stronger with depth. 72 - 78.6 Abundant green mica.	«5-8% py» 5-8% py, mainly in qtz-carb zones. Up to 15% py in green mica zone.	
78.60 TO 94.80	CHERT «CHT»	Colour - grey Grain Size - aphanitic Contorted but quite well bedded chert with sections of chert breccia and muddy tuff. Locally broken and gougey. Tuff screens from: 86.25 - 87.5 88.2 - 88.7 90.7 - 91.0 (grades to py-qtz-leucoxene bed)		WEak sericite in tuff screens.	«10% py» 10% py, locally to 20% over a few cm. Pervasive traces of sp-tet-gn-cp to 86.3 then rare sp only. {90.9 - 91.1} «30% py» 30% py with good leucoxene in qtz matrix.	
94.80 TO 151.50	MUDDY TUFF «MUT»	Colour - grey Grain Size - fine grained Initially quite tuffaceous but becoming good Muddy Tuff. {97.1 - 97.4} «FLT» strongly sheared zone. 97.4 - 151.5 grey, homogeneous muddy tuff. Moderately well foliated with fine cherty or quartzose knots and very finely disseminated py. Gradually becomes lighter grey in colour, more and more weakly foliated and more generally tuffaceous looking.	 70 75 61	Normal muddy tuff clay-sericite.	5-8% very finely disseminated py. Rare trace of sp or tet. Rare qtz veinlets with sp-tet. From 115m, veining sp-tet becomes more common. Though not concentrated there is good tetrahedrite within individual veinlets. Only rarely does	15% diss'd py

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
					it exceed 1/2 - 1% sp-tet over 1 1/2m or so.	
151.50 TO 151.60	FAULT GOUGE «FLT»	Short but distinct fault zone.				
151.60 TO 152.20	CHERT «CHT»	Colour - grey-black Grain Size - aphanitic Rea breccia type chert.	70		2% diss'd py except for a 2cm pyritic bed at 152.0.	
152.20 TO 161.40	MAFIC VOLCANIC «MT»	Colour - grey Grain Size - fine grained Grey mafic fragmental with moderate quartz-carbonate veining. Only weakly foliated. Yellow sausserite speckling common in the matrix. Contact knife sharp at =	75	Weak to moderate sericite and chlorite throughout.	152.2 - 153.7 Abundant veiny sulphides. Mainly py-sp-gn but also cp and tet locally. No more than 2% combined sp-gn-cp-tet over section. 153.7 - 161.4 5% diss'd py with an occasional veinlet contains sp-gn (cp-tet)	
161.40 TO 162.10	CHERTY ARGILLITE «CHT ARG»	Colour - black Grain Size - aphanitic Black, mainly argillite. Shared but not faulted. Contact sharp at =	55			
162.10 TO 162.40	MAFIC VOLCANIC «MT»	Colour - grey As 152.2 - 161.4 Contact sharp at =	55			All nice bedding contacts.
162.40 TO 163.00	CHERTY ARGILLITE «CHT ARG»	Colour - black As 161.4 - 162.1 Contact sharp at =	70			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
163.00 TO 175.90	MAFIC VOLCANIC «MT»	Colour - grey Quite homogeneous, only weakly altered. Weakly to moderately foliated. Common quartz-carb. veinlets. END OF HOLE	72	Patchy weak to moderate sericite	2-3% disseminated pyrite	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD4128	77.20	78.50	1.30				2.2	.055			130	88	54	2.2	55		
BCD4129	80.30	81.70	1.40	.068	.23	.12	7.2	.24									
BCD4130	84.80	86.30	1.50	.011	.01	.01	1.0	.02									
BCD4131	90.70	91.50	0.80	.010	.06	.01	4.9	.01									
BCD4112	115.90	118.00	2.10	.006	.09	.01	1.9	.01	.19								
BCD4113	118.00	119.50	1.50	.009	.07	.01	3.8	.01	.13								
BCD4114	119.50	121.00	1.50	.07	.15	.08	23.0	.22	.16								
BCD4115	121.00	123.50	2.50								237	100	400	7.3	135	1900	
BCD4116	123.50	125.00	1.50	.08	1.25	.78	60.0	.40	.12								
BCD4117	125.00	125.70	0.70								51	75	300	1.7	220	1480	
BCD4118	125.70	127.10	1.40	.081	.39	.23	28.0	.74	.08								
BCD4119	127.10	128.60	1.50	.08	.09	.08	31.8	.55	.08								
BCD4120	136.50	137.90	1.40	.008	.01	.01	2.1	.04	.10								
BCD4121	144.90	146.50	1.60	.204	.23	.08	52.0	.05	.18								
BCD4122	146.50	148.10	1.60	.010	.01	.02	2.4	.12	.11								
BCD4123	148.10	149.40	1.30	.025	.45	.24	14.2	.10	.25								
BCD4124	149.40	150.20	0.80	.014	.70	.22	9.0	.38	.22								
BCD4125	150.20	151.40	1.20	.029	.53	.23	28.2	.57	.80								
BCD4126	152.20	153.70	1.50	.051	.77	.46	16.0	.05	.04								
BCD4127	156.30	157.30	1.00	.016	.02	.04	2.6	.01	.18								

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCB4253	9.00	11.00	2.00	47.75	15.49	6.55	11.35	2.45	0.01	12.63	0.27	1.63	.005	.007	92	113	.010	98.15	
BCB4254	34.00	37.00	3.00	43.03	16.32	8.82	11.31	0.29	2.15	13.96	0.30	1.71	.109	.007	88	144	.005	97.91	
BCB4255	70.00	73.00	3.00	47.50	21.66	3.53	6.03	0.41	4.87	12.34	0.43	1.10	.200	.005	120	132	.005	98.08	
BCB4256	157.00	159.50	2.50	46.94	17.38	8.79	5.59	0.39	4.34	11.75	0.32	1.75	.284	.007	112	82	.005	97.54	

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REAI
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 637.61N
EAST: 9601.55W
ELEV: 1665.50

ALTERNATE COORDS GRID: FIELD
NORTH: 95+90N
EAST: 6+15W
ELEV: 1665.00

COLLAR DIP: -65° 0' 0"
LENGTH OF THE HOLE: 220.40m
START DEPTH: 0.00m
FINAL DEPTH: 220.40m

COLLAR GRID AZIMUTH: 205° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 250° 0' 0"

DATE STARTED: July 28, 1986
DATE COMPLETED: August 1, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
70.00	-	-64° 0'	ACID	OK		-	-	-	-	-	
110.00	-	-63° 0'	ACID	OK		-	-	-	-	-	
150.00	-	-63° 0'	ACID	OK		-	-	-	-	-	
180.00	-	-62° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.00	CASING «OB»					
3.00 TO 153.25	MAFIC PYRO-CLASTIC «MPYRO»	Colour - green Grain Size - fine grained Excellently preserved lapilli - black tuff. As previously described. Bedding 72m = Becomes blocky about 88m. Gouge zones start at 91.5m and go to 93.5m. Bedding 96m = Approx. 102 Quartz-carb veins and patches becoming increasingly common to 30% of core. Core is also very blocky and sheared. Very distinctive. Contact slightly sheared.	60 to 70 68 72	27 - 31 Dark, chloritic? Locally becomes slightly chloritic. Weak-moderate sericite associated sith veiny zone but back to unaltered by 75m. Carb-chl (+ser) becomes quite strong. From 140-146 sericite predononates then core becomes quite grey with carb (-chl?) Strong sericite over last 15cm.	«1% py» <1% py except in localy veiny zones where it can get up to 10% over 10-15cm Blebs of cp (-gn) in quartz vein at 58m. Other blebs of co and/or gn in qtz from 68-70m. py 5-8% by 70m. Blebs of cp-gn in qtz vein at 111m. Averages 7 or 8% py over the qtz-carb rich section.	103.5 - 110.5 20% recovery (tube mislatch)
153.25 TO 158.80	CHERT AND SULPHIDES «CHT+SUL»	Colour - grey Grain Size - aphanitic Mainly grey to black massive to brecciated chert with sulphide beds. 155.3 - 156.6 Chert with a sericitic tuff component with sulphides along the foliation as weak incipient stockwork. 156.6 - 157.3 Black chert with quartz and sulphides 157.3 - 158.6 Chert and sericitic tuff 158.6 - 158.8 Vuggy, porous quartz vein (carbonate leached out?) 158.8 - 159.3 Quartz breccia vein? Poss silicified quartz wacke. Both contacts marked by gouge.	85 80 80		{153.32 - 153.34} «50%py,5% sp,1% apy» 50% py, 4% cp, 5% sp, 1% apy, in SMS bed. {153.45 - 153.48} «SMS» 25% py, 25% sp, 15% gn, 10% cp, 5% tet in SMS bed. {153.62 - 153.72} «SMS» 15% cp, 15% sp, 12% gn, 5% tet, 2% py, 1% apy as the massive sulphide matrix to chert breccia. In between and to 155.3, 1% cp, 1% sp, 1/2% tet, 1/2% gn, and 15% py as fine beds or disseminated. 155.3 - 156.6 0 - 15% py. 2% combined sp-cp-tet -gn in veiny zones. 156.6 - 157.3 25% py, 1/2% sp, 1/4% cp, 1/4% tet, tr gn. 15% py except for 158.1 - 158.2 5% tet, 5% sp, 5% gn in quartz vein 158.6 - 158.8 10-12% tet, 2-3% sp	153.25 - 153.75 (1.5m) 15% py, 2% sp, 2.5% sp, 1% tet, 1% gn, trace apy.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
					1% py.	
159.30 TO 172.60	ALTERED (MUDDY) SEDIMENTS «WAX+MUD»	Colour - grey Grain Size - fine grained Interbedded quartz wackes and sericitic mudstones. Nice pyrite "fragments" at 161.6 but probably metamorphic. From 168 - 172.6 very blocky, local gouge zones.	75	Mudstone component is sericitic. Sericite peters out approx. 166m. Sericite picks up again over last 2m.	«<5% py» 5% py often as quartz-pyrite "frags" or metamorphic knots. 10% py in qtz-py bands.	
172.60 TO 172.80	QUARTZ VEIN «QV»	Irregular, apparently barren bull white quartz vein.				
172.80 TO 182.80	GRANULAR QUARTZITE/ MUDDY TUFF WITH QUARTZ «QTE+MUT»	Strongly sheared and micaceous grey quartzite with abundant quartz veining. Muddy tuff in places with good clay component. Bedding 173.5m = Bedding 175m = Mineralized throughout but very hard to see. Most common is fine grained honey sphalerite but very fine grained tetrahedrite also common. See Sulphides for breakdown.	55 67		[173.25 - 173.8] «MS» Massive sulphide grading to semi-masive downhole. 50% S. overall, 20% py, 20% tet, 10% sp, 5% cp, 5% gn/ 173.8 - 176.1 Weakly diss'd S with 10% qtz veining 1-2% sp, 1-2% tet, 10% py, trace cp, gn 176.1 - 176.3 Quartz vein in wallrock frags. Barren 176.3 - 177.4 Strongly diss'd S in sheared, micaceous matrix. 35% ovrall 15% py, 10% tet, 5% sp, 3% cp, 2% gn 177.4 - 177.7 Quartz vein. Minor gn, sp, tet, py, cp 177.7 - 178.6 Weakly diss'd S in quartzite with 35% q quartz. 10% py, 1% tet, 1% sp, 1/2% cp 178.6 - 182.8 Mainly py, abundant qtz (30%), sheared, micaceous. 20% py, <1% tet, sp, traces cp, gn.	#173.25 - 177.4 (4.15cm) 12% py, 6% tet, 3.5% sp, 1.5% cp, 1% gn. (Est. 500 g/T Ag, 2.5% Zn, 1% Cu)
182.80 TO 190.30	SERICITIC SEDIMENTS «MUD»	Colour - yellow-grey Grain Size - fine grained Interbedded siltstone and mudstone with strong sericite and pyrite. Becomes sheared and mylonitized towards the bottom.	65	«strong ser» Strong sericite to 185.8 then grades rapidly to unaltred.	«20% py» 20% pyrite throughout sericitic zone then drops to 1-2%. Trace sp. Coarse apy over 2-3cm at 186.2 and 187. (Veiny with py_	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
190.30 TO 190.70	FAULT GOUGE «FLT»	Graphitic and muddy gouge.				
190.70 TO 195.30	MUDDY TUFF AND SEDIMENT «MUT+SED»	Colour - grey Grain Size - fine grained Mixed muddy tuff, sericitic sediment and fine debris flow material	75	Moderate sericite locally	10% diss'd py. Local traces of sp.	
195.30 TO 220.40	CHERT, CHERTY ARGILLITE AND (SERICITIC) TUFF «CHT+ARG+» «SERT»	Colour - grey black Grain Size - aphanitic Grey bedded chert, chert breccia dn argillite wth tuff screens and quartz veins END OF HOLE	70	Weak to moderate sericite in tuff screens.	Common pyritic argillite beds. Good massive bedded pyrite fragment at 200.0 (1cm) 15% py overall.	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD4133	151.75	153.25	1.50								51	133	162	1.6	5		
BCD4134	153.25	153.75	0.50	0.94	3.02	0.65	60.2	0.40		0.01							
BCD4135	153.75	155.30	1.55	0.114	0.21	0.12	7.6	0.09		0.40							
BCD4136	155.30	156.60	1.30	0.032	0.15	0.09	10.0	0.03		0.34							
BCD4137	156.60	158.10	1.50	0.023	0.03	0.01	3.9	0.06		0.32							
BCD4138	158.10	158.80	0.70	0.302	1.03	0.72	232.0	0.57		2.98							
BCD4139	158.80	160.30	1.50								22	31	10	0.9	40	4500	
BCD4140	172.70	173.25	0.55	0.042	0.07	0.07	66.2	0.18	0.01	0.51							
BCD4141	173.25	173.80	0.55	1.43	5.34	3.01	1800	5.64	0.65	1.20							
BCD4142	173.80	175.30	1.50	0.110	0.82	0.41	141.0	0.41	0.04	1.05							
BCD4143	175.30	176.30	1.00	0.052	0.52	0.20	58.0	0.08	0.15	0.85							
BCD4144	176.30	177.40	1.10	0.74	3.03	1.80	600	0.97	0.25	1.88							
BCD4145	177.40	178.60	1.20	0.028	0.02	0.02	17.8	0.23	0.10	0.46							
BCD4146	178.60	180.10	1.50	0.016	0.01	0.01	9.6	0.38		0.67							
BCD4147	180.10	181.60	1.50	0.030	0.06	0.01	8.0	0.44		0.66							
BCD4148	181.60	182.80	1.20	0.028	0.04	0.03	14.2	0.62		1.15							
BCD4149	182.80	184.30	1.50								32	23	68	2.9	240	27000	
BCD4150	184.30	186.10	1.80	0.006	0.01	0.01	1.9	0.20		1.32							
BCD4151	186.10	187.10	1.00	0.006	0.01	0.01	1.0	0.03		0.30							

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4182	5.20	8.00	2.80	47.7	14.61	7.9	10.47	3.65	0.01	12.14	0.38	1.28	.005	.005	74	108	.011	98.14	
BCD4183	38.20	41.80	3.60	46.98	14.84	7.45	11.63	2.25	0.01	12.80	0.27	1.67	.006	.007	88	92	.022	97.93	
BCD4184	72.20	75.50	3.30	42.55	11.51	17.91	10.63	2.15	0.32	10.91	0.68	1.19	.179	.005	76	110	.006	98.05	
BCD4185	111.30	114.60	3.30	47.91	16.24	8.43	7.38	0.15	4.16	12.17	0.19	1.38	.081	.005	73	112	.005	98.10	
BCD4186	147.20	151.50	4.30	42.47	14.57	9.81	14.14	0.03	1.30	13.16	0.44	1.76	.177	.010	84	264	.036	97.91	

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: I

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REAI
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 638.59N
EAST: 9602.20W
ELEV: 1665.60

ALTERNATE COORDS GRID: FIELD
NORTH: 6+20N
EAST: 95+90W
ELEV: 1665.00

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 248.70m
START DEPTH: 0.00m
FINAL DEPTH: 248.70m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: August 1, 1986
DATE COMPLETED: August 7, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.00	-	-89° 0'	ACID	OK		-	-	-	-	-	
70.00	-	-89° 0'	ACID	OK		-	-	-	-	-	
137.00	-	-84° 0'	ACID	OK		-	-	-	-	-	
180.00	-	-81° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.00	CASING «OB»					
3.00 TO TO 185.10	MAFIC PYRO-CLASTIC «MPYRO»	Colour-green Grain Size - fine grained Well preserved mafic lapilli block and ash flow. Broken near surface with weathering on fractures. Fragments are weakly but distinctly stretched. Foliation is weak to moderate. Sparse qtz-carb veins.	58	Nil	<1% py	Water return lost at 11.5m.
		Bedding 25m =	56			
		Bedding 42m =	68			
		Distinctive carbonate knots (vesicles?) around 51m			15% py along with minor gn-sp-cp present in qtz-carb veins at 63.8 and 64.8m.	
		Bedding 50m =	60			
		64.6 - 64.9 Quartz-carb-sulphide vein				
		⌊68.5 - 70.5⌋ «FLT» Badly broken with fault breccia and gouge. Fault is well healed locally with quartz. Back to good mafic pyroclastic again.			Traces of gn at 70.5 in qtz healed fault breccia. 1-2% diss'd py.	
		Bedding 72m =	54	Nil		
		Bedding 90m =	60	From 90.6	Increase to 5% py.	
		Bedding 108m =	58	Slight sericite-carb-ep bleaching appears for a couple of metres.	10cm vuggy pyrite occur at 94.7m. Back to approx. 1% py.	
		108m Becoming broken and blocky with local ground zones				
		⌊119 - 159⌋ «qtz-carb veins» Still blocky. Quartz-carb veining becoming very abundant. Fragments are very indistinct. Foliation becomes quite strong 5cm fault gouge at 140.3. Same rocks on either side.		Wk-mod chl-carb (ser) with veining.	Increase to 5% py with stronger qtz-carb veining.	Distinctive carb-qtz sheared zone.
		Bedding 125m =	58			
		Bedding 141m =	65		150.9 - 152.4 A little gn-sp-cp in qtz-carb veins.	
		159.6 - 169.3 Qtz-carb zone finished. A few fragments reappear initially, then back to good lapilli, block and ash flow.		Wk-mod ser-chl-carb throughout. Frags. are distinctly saussuritized. Matrix altered too.	5% py, diss'd and as more concentrated veining zones.	
		Bedding 159m =	67			
		⌊168.3 - 168.4⌋ «FLT» Fault breccia				
		⌊168.4 - 185.1⌋ «strong carb-sil» Becoming strongly altered, pyritic mafic. Fragments often obscured. Other small gouge		Moderate-strong sericite and/or chlorite. Local green mica. Patches	10% diss'd py locally to 20%	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		zones common. Carb-silica flooding almost cherty in places. Bedding 173m =	67	of intense carb-silica flooding.		
		Contact sharp at =	80			
185.10 TO 188.10	SERICITIC TUFF «SERT»	Colour - buff Grain Size - fine grained Intensely sericitic mafic with weak incipient qtz-py stockwork. Minor gouge.	77	«qtz-py stockwork» Intense sericite	15% py.	
		Contact sharp at =	73			
188.10 TO 197.45	MUDDY TUFF «MUT»	Colour - grey Grain Size - fine grained Typical muddy tuff with sheared and gougey zones. 188.1 - 193.1 Weak to strong silica flooding with sulphides. Almost chert in places. Includes massive sulphide beds.	52 - 58	«sil flooding» Weak to strong silica flooding.	«beds of MS,SMS» 188.1 - 188.75 (0.65m) 15% py, 10% tet, 8% sp, 2% cp disseminated in sheared muddy tuff. 188.75 - 189.15 (0.4m) 25% tet, 25% sp, 5% cp, 5% gn, tr apy as 2 massive sulphide bands in silica flooded muddy tuff 189.15 - 190.7 (1.55m) 6% tet, 5% sp, 2% gn, 1% py, .5% cp as blebs, veinlets and disseminated in silica flooded muddy tuff. 190.7 - 191.20 (0.50m) 15% sp, 10% gn, 10% tet, 5% py, 1% cp strongly disseminatd in silica flooded muddy tuff. 191.20 - 191.75 (0.5mm) 30cm of 80% S followed by 25cm of massive, 35% sp, 20% tet, 25% py, 8% gn, 3% cp. 191.75 - 193.1 (1.35m) 15% py, 5% sp, 5% tet, 2% cp, 1% gn disseminated in muddy tuff and in veinlets	5% apparent = 4.1m true approx. 188.75 - 191.75 (3.0m) 12% tet, 15% sp, 6% py, 5% gn, 1.5% cp, tr apy. 188.1 - 193.1 (5.0m) 10% tet, 11% sp, 10% py, 3% gn, 1.5% cp, tr apy.
		193.1 - 193.2 «FLT» Fault gouge.			193.1 - 193.2 Fragments of tet, sp, py and cp in gouge.	
		193.2 - 195.5 Pyritic muddy tuff with a little leucoxene.	56		25% fine py uniformly throughout.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		195.5 - 197.45 Muddy tuff, sheared and broken with some sulphide.	63		Occ. sp-tet as small blebs or veinlets increasing towards 195.5. 195.5 - 196.3 3% sp, 1% tet, 10% py, diss'd.	
197.45 TO 212.60	DEBRIS FLOW «MUT»	Colour - grey Grain Size - fine grained Good sedimentary debris flow as seen elsewhere. Detritus includes chert, cherty argillite, muddy tuff (some pyritic) and volcanic clasts up to 3cm (generally less than 1.5cm). Not obviously bedded or graded though, in some zones, the fragments are more obvious than in others. Matrix tends to be quite siliceous - probably silica flooding of original muddy tuff.	60 - 63		Pervasive 5% finely disseminated pyrite with occasional traces of sphalerite. Sp-tet occurs in veiny zones irregularly with best zones as follows: 202.2 - 200.5 2% sp, 2% tet. 203.0 - 203.4 3% sp, 1% tet. 208.2 - 208.5 6% sp, 4% tet. 209.1 - 209.4 4% sp, 3% tet. 210.5 - 210.8 3% sp, 3% tet.	
212.60 TO 220.40	FAULT ZONE «FLT»	Colour - grey Numerous gouge and fault breccia zones with muddy tuff and debris flow/remnants culminating in a quartzose and pyritic gouge from 219.9 - 220.4. (variable)			Variably pyritic locally up to 20% over 10cm. Trace sp.	
220.40 TO 231.00	WACKES AND ARGILLITE «WAK+ARG»	Colour - grey-black Grain Size - fine grained - a.g. Interbedded and laminated muds, silts, and locally grits. The coarser beds have good blue quartz grains and fine chert and argillite clasts. (Can be quite folded but generally approx =	60	Last 5cm are sericitic.	Occasional pyritic beds and patches. A few coarse apy crystals at 220.8, 222.3 and 222.4. (No concentration)	
231.00 TO 234.90	QUARTZ, SERICITIC SEDIMENTS AND FAULT GOUGE «QTZ+SERT»	231 - 233.1 Mainly bull quartz with sericitic sediment xenoliths. 233.1 - 233.6 Intense gouge. 233.6 - 234.9 Mainly sheared muddy tuff with quartz and gouge.				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
234.90 TO 240.15	PYRITIC MUDDY TUFF «MUT+py»	Colour - grey Grain Size - fine grained Intensely foliated pyritic muddy tuff with vague debris flow in places. A few gouge zones. Abundant bull quartz from 238 to 240. Contact knife sharp at =	70	Good green mica over last 15cm.	Initially 35% pyrite reducing rapidly to 10%. Minor sphalerite locally. Trace of sp, tet and gn associated with quartz veining. Pyrite again increasing to 35% towards contact.	
240.15 TO TO 248.70	SERICITIC TUFF, MINOR TUFF, MINOR CHERT «SERT+CHT»	Colour - yellow to grey Grain Size - fine grained Grain Size - fine grained Initially sericitic tuff, not much different occasional pyritic, argillitic, fragmental beds. TOPS UP HOLE! END OF HOLE				

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD4170	63.70	64.90	1.20	0.151	0.30	0.70	5.3	0.02		0.07							
BCD4171	183.60	185.10	1.50									27	33	66	2.1	25	
BCD4172	185.10	186.60	1.50									32	97	34	1.3	60	
BCD4173	186.60	188.10	1.50									43	165	78	1.5	20	
BCD4153	188.10	188.75	0.65	0.71	4.69	2.83	147	0.45	0.32	0.92	0.23						
BCD4154	188.75	189.15	0.40	5.23	6.43	4.40	2340	1.46	6.55	0.42	2.96						
BCD4155	189.15	190.70	1.55	0.163	2.53	1.62	115	0.13	0.30	0.08	0.12						
BCD4156	190.70	191.20	0.50	0.024	6.75	4.47	110.5	0.30	0.27	0.87	0.08						
BCD4157	191.20	191.75	0.55	0.387	13.6	9.34	360	0.79	0.79	0.03	0.14						
BCD4158	191.75	193.10	1.35	0.253	1.42	1.08	146	0.46	0.37	0.82	0.12						
BCD4159	193.10	194.60	1.50	0.109	0.76	0.48	63.8	0.53		1.76							
BCD4160	195.50	196.30	0.80	0.024	2.69	1.51	51.2	0.58		1.04							
BCD4161	200.20	201.60	1.40	0.138	0.38	0.12	74.8	0.64		0.50							
BCD4162	201.60	203.00	1.40	0.018	0.01	0.04	7.8	0.22		0.22							
BCD4163	203.00	203.40	0.40	0.262	2.96	0.37	164.6	1.04		0.19							
BCD4164	206.60	208.20	1.60	0.043	0.21	0.10	22.0	0.20		0.40							
BCD4165	208.20	208.55	0.35	3.425	4.68	2.48	1415.0	3.60		0.01							
BCD4166	208.55	209.10	0.55	0.033	0.07	0.08	12.1	0.18		0.18							
BCD4167	209.10	209.45	0.35	0.399	0.89	0.41	179.0	1.03		0.20							
BCD4168	209.45	210.50	1.05	0.021	0.08	0.02	5.7	0.17		0.28							
BCD4169	210.50	210.80	0.30	0.207	0.76	0.38	148.5	0.61		0.10							

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4187	8.50	12.00	3.50	45.2	15.98	6.02	13.19	1.19	0.02	14.35	0.19	1.72	.005	.007	94	100	.015	97.89	
BCD4188	43.70	47.00	3.30	46.42	14.06	10.38	11.72	2.07	0.01	11.53	0.28	1.58	.012	.006	80	96	.005	98.05	
BCD4189	71.90	75.00	3.10	49.54	15.93	2.88	11.36	2.7	0.01	13.45	0.22	1.70	.047	.007	86	108	.015	97.86	
BCD4190	105.50	108.50	3.00	46.68	14.23	8.82	11.44	2.66	0.03	12.40	0.27	1.40	.019	.006	72	104	.005	97.96	
BCD4191	140.50	143.50	3.00	45.17	15.10	14.64	7.36	0.28	3.06	10.40	0.16	1.49	.028	.007	76	88	.016		
BCD4192	174.80	177.80	3.00	26.11	19.67	18.95	10.99	0.34	4.97	12.04	0.82	2.06	1.334	.015	20	36	.005	97.31	

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REAI
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 755.16N
EAST: 9656.76W
ELEV: 1679.20

ALTERNATE COORDS GRID: FIELD
NORTH: 96+28N
EAST: 7+32W
ELEV: 1675.00

COLLAR DIP: -65° 0' 0°
LENGTH OF THE HOLE: 294.40m
START DEPTH: 0.00m
FINAL DEPTH: 294.40m

COLLAR GRID AZIMUTH: 208° 0' 0°
COLLAR ASTRNOMIC AZIMUTH: 253° 0' 0°

DATE STARTED: August 8, 1986
DATE COMPLETED: August 14, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
88.00	-	-63° 0'	ACID	OK		-	-	-	-	-	
137.00	-	-63° 0'	ACID	OK		-	-	-	-	-	
176.00	-	-62° 0'	ACID	OK		-	-	-	-	-	
198.00	-	-62° 0'	ACID	OK		-	-	-	-	-	
237.00	-	-64° 0'	ACID		suspect	-	-	-	-	-	
294.00	-	-60° 0'	ACID			-	-	-	-	-	
213.00	218° 0'	-64° 0'	TRO-PARI		suspect	-	-	-	-	-	
290.00	218° 0'	-61° 0'	TRO-PARI		suspect	-	-	-	-	-	
290.00	223° 0'	-61° 0'	TRO-PARI	OK		-	-	-	-	-	
290.00	223° 0'	-62° 0'	TRO-PARI		suspect	-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.00	CASING <OB>					
3.00 TO 218.10	MAFIC PYRO-CLASTIC <MPYRO>	Colour - green Grain Size - fine grained Collared into a quartz-carb vein zone with gn-sp-py-cp (Twin Mtn mineralization). Good lapilli, block and ash flow. Frags can be quite yellow, saussuritized looking and are often vesicular. 20 - 23 Qtz-carb-ser-py zone Bedding 37m = Still oxidized along fracture zones at 40m. Still getting good bull qtz-carb veins. Fragments are fairly infrequent between 40 and 55. More tuffaceous. Qtz veins are gone approx 55. Becoming typically fragmental again. Much less fractured. Frags. still quite yellow-looking. Still a few good bull qtz-carb veins. Bedding 59m = Bedding 68m = Bedding 82m = Bedding 93m = 99 - 105 Ash section with blebs and patches of pyrite throughout. Bedding 109m = Approx 130 - 135 Becomes slightly blocky after a long massive section. Bedding 134m = Qtz-carb veining picks up. Bedding 140m = Bedding 155m = 160.2 - 160.3 Fault Gouge Pyroclastic is pristine here, virtually non-foliated. Becoming gradually blockier through the 170's and 180's. 181.9 - 182.0 Fault gouge Bedding 185m = Bedding 189m = Contact gouged.	70 70 72 67 68 73 75 78 80 82 72 74	Some frags are saussuritized. Feldspar in the matrix can be likewise, giving a speckled appearance. 55 - 78 Bleached (saussuritized) fragments. Matrix may locally be moderately to weakly altered to chl + carb + ser. From 78m - starting to look unaltered, but still a vague saussurite speckling. Nil	Minor gn-sp-py-cp in qtz-carb veins. Otherwise less than 1% py. 20 - 23 15% fine py as blebs in altered, veiny zone. 27 - 28 Gn-sp-cp-py in qtz-carb vein. Up to 8% py associated with veins (in wallrocks). 3-4% diss'd py. 71-73 15% py in chloritic zone 87.7m Sp-gn-py in qtz-carb vein (4cm) 97.8 Sp-gn-cp-py in qtz-carb vein (6cm) 99 - 105 10% py as blebs and patches 1% diss'd py. 143.7 Gn-sp-py in veiny zone (5cm)	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		193.4 - 218.1 Grey carb-chl-ser altered mafic with qtz-carb veining. Frags vague where present. variable Blocky, slightly gougey. 202 - 208 Quartz-carb knot zone overprinted by later alteration. Bedding 217.5m =	75 to 85 75	193.4 - 218.1 Moderate carb-chl-ser. Becoming more sericite dominated and stronger with depths but still not as intense as on the Rea horizon	2% py. Occasional trace gn in qtz vein Py picks up to 5-8% with sericite content.	
218.10 TO 223.70	FAULT ZONE «FLT»	Gouge zones interspersed with mafic tuff xenoliths of various colours, sizes and degrees of alteration generally approx =	80	Variable	Variably py (-10% in xenoliths. A few frags contain py-gn-sp in qtz veins	Ground sections but overall 90% + recovery
223.70 TO 228.30	MAFIC PYRO-CLASTIC, MINOR CHERT «MPYRO+CHT»	Colour - distinctly grey Grain Size - fine grained Grey mafic lapilli tuff. Quite different from pervious section. Interflow chert/arg. breccia zones.	70	Carb-rich?	2% diss'd py.	
228.30 TO 229.00	FAULT GOUGE AND BRECCIA «FLT+BX»	Partially healed with mafic frags giving way to sericitic tuff and cherty argillite gouge. Also a massive gn-sp-py fragment at 228.7.	45 to 55			
229.00 TO 231.00	SERICITIC TUFF WITH CHERT AND ARGILLITE «SERT+CHT» «+ARG»	Colour - grey to yellow to black Grain Size - fine grained Shared mixture of mafic tuff with sericite, strongly sericitic tuff, argillite and cherty argillite layers Foliation = Shearing at = Contact marked by 8cm of gouge	75 40	Strong sericite	5% py	
231.00 TO 264.00	MUDDY TUFF «MUT»	Colour - grey Grain Size - fine grained Homogeneous pyritic muddy tuff with a little leucoxene. Weak silica flooding locally with sp-py-tet mineralization 236.5 - 237.5	68		231 - 233 10% py, <1% comb sp, tet in silica flooded areas. {233 - 234.4} <3% sp, 2% tet, 1% gn>
3% sp, 2% tet, 1% gn in a series of silica flooded zones 236.5 - 237.6	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Semi-massive pyrite bed (muddy) 251 - 252 Distinctly fragmental - "debris flow". Occasional gouge zones become more common with depth. 257.9 - 260.9 10% recovery - ground core 260.9 - 264.0 50% recovery - ground core Contact lost, ground.			4% sp, 3% tet in silica flooded zones within pyritic bed {254.5-256.1}<5% tet, 5% sp, 10-20% py> 5% tet, 5% sp. Elsewhere up to 2% sp 2% tet over 1m sections. Generally 10-20% fine py. 257.9 - 264.0 Veiny tet-sp.	
264.00 TO 283.10	SEDIMENTS <WAK+ARG>	Colour - grey-black Grain Size - fine grained Interbedded and laminated wackes and argillites. 267.5 (but very variable, eg 271 = Some very coarse wackes. Tops both ways	 58 80	30% pyt over first 30cm reducing to 3% as fine to coarse crystals. Very occ. coarse apy crystal.		
283.10 TO 283.40	FAULT GOUGE <FLT>	Includes a xenolith of pyritic muddy tuff.				
283.40 TO 294.40	SERICITIC TUFF AND CHERT <SERT+CHT>	Colour - yellow-light grey Grain Size - very fine grained Very homogeneous sericitic tuff with chert and pyrite. Bedding 285m = Bedding 293m = END OF HOLE	 68 73	Strong sericite.	10% diss'd py.	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD4174	230.90	233.00	2.10	.041	.06	.04	6.6	.01									
BCD4175	233.00	234.30	1.30	.303	1.5	.80	64.0	.32									
BCD4201	234.30	236.50	2.20	.098	.18	.21	16.5	.01									
BCD4202	236.50	237.60	1.10	.069	3.26	1.10	22.3	.12									
BCD4203	237.60	238.45	0.85	.040	.04	.07	6.3	.03									
BCD4204	238.45	239.90	1.45	.044	1.02	.42	11.9	.01									
BCD4205	239.90	242.00	2.10	.021	.17	.20	4.1	.02									
BCD4206	242.00	243.50	1.50	.124	1.2	.71	47.5	.24									
BCD4207	243.50	245.00	1.50	.060	1.2	.73	21.7	.16									
BCD4208	245.00	246.70	1.70	.070	.58	.21	20.4	.02									
BCD4209	246.70	248.20	1.50	.024	.08	.01	3.7	.01									
BCD4210	248.20	249.70	1.50	.222	.30	.17	66.4	.18									
BCD4211	249.70	251.10	1.40	.096	.23	.21	29.6	.20									
BCD4212	251.10	252.60	1.50	.258	.87	.36	88.1	.22									
BCD4213	252.60	254.50	1.90	.042	.28	.07	14.0	.02									
BCD4214	254.50	256.10	1.60	1.38	2.04	1.28	470	.24									
BCD4215	256.10	257.90	1.80	.229	.41	.18	86.4	.16									
BCD4216	257.90	260.90	3.00	.190	.43	.22	75.8	.15									
BCD4217	260.90	264.00	3.10	.040	.28	.10	10.3	.20									

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4193	7.00	9.50	2.50	43.01	15.16	10.73	11.13	3.24	1.18	11.73	0.30	1.30	.039	.006	56	312	.024	97.85	
BCD4194	40.00	42.90	2.90	46.22	15.37	7.12	11.44	2.34	0.81	12.65	0.40	1.64	.046	.007	72	200	.011	98.05	
BCD4195	71.90	75.00	3.10	40.16	15.07	6.68	16.81	0.69	0.87	15.10	0.43	1.60	.052	.007	54	3400	.072	97.54	
BCD4196	105.40	108.50	3.10	45.81	15.44	5.79	14.05	1.72	0.01	13.31	0.38	1.60	.007	.006	144	144	.022	98.15	
BCD4197	135.50	138.70	3.20	45.39	13.64	9.53	12.03	3.02	0.04	12.24	0.27	1.83	.053	.009	72	89	.012	98.06	
BCD4198	169.60	172.60	3.00	47.22	13.38	10.17	10.25	4.16	0.05	11.41	0.24	1.31	.051	.006	76	73	.010	98.23	

.INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 734.73N
EAST: 9627.68W
ELEV: 1679.68

ALTERNATE COORDS GRID: FIELD
NORTH: 7+15N
EAST: 95+98W
ELEV: 1671.00

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 256.60m
START DEPTH: 90.00m
FINAL DEPTH: 346.60m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: September 12, 1986
DATE COMPLETED: September 16, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: 3.2m LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
32.30	-	-88° 0'	ACID	OK		-	-	-	-	-	
78.00	-	-87° 0'	ACID	OK		-	-	-	-	-	
127.10	-	-84° 0'	ACID	OK		-	-	-	-	-	
173.70	-	-82° 0'	ACID	OK		-	-	-	-	-	
224.60	-	-81° 0'	ACID	OK		-	-	-	-	-	
264.30	-	-85° 0'	ACID		suspect	-	-	-	-	-	
313.00	-	-80° 0'	ACID	OK		-	-	-	-	-	
343.50	206° 0'	-80° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.20	OVERBURDEN «OB»					Casing
3.20 TO 239.40	MAFIC PYRO-CLASTIC «MPYRO»	Colour - greenish grey with light grey fragments Bedding 6.5m = Grain - fine grain matrix; medium grain fragments Bedding 19.5m = Lapilli and block sized fragments in fine grain green ashy matrix Alignment and stretching of fragments give rock foliation Bedding 25.0m = Foliation becomes more intense in unaltered area Unaltered fragments are a light grey colour and medium grain Bedding 41.5m = Bedding 49.0m = Bedding 59.0m = {66.1-67.4} «FLT» 66.1 - 67.4 - fault zone Bedding 83.0m = Bedding 93.0m = Bedding 93.0m = 95.25 2cm wide fault gouge Bedding 100.0m = Bedding 111.0m = 155.9 - 156.1 - fault gouge 162.2 - 165.0 - fault gouge Bedding 119.5m = Fault gouge at: 173.9 (5cm) 174.5 (5cm) Bedding 132.0m = Bedding 141.0m Bedding 142.0m = Bedding 160.0m = Bedding 181.8m = Bedding 188.0m = Bedding 217.0m =	50 50 60 65 50 50 65 55 50 60 60 60 55 55 55 55 55 60 60	Weakly patchy sricitic areas qtz-sericite-green mica vein at 17.8 - 18.4 21.8 - 27.6 moderate pervasive sericite with 5% qtz veins {27.6 - 45.15} «intense ser + qv's» intensely sericitic host rock with qtz green mica veins at: 28.5 - 29.3 30.05- 32.3 33.0 - 34.1 34.5 - 35.4 35.85- 36.1 36.7 - 37.55 45.0 - 45.15 45.15 - 81.1 patchy sericitic areas 3-5% qtz veinlets, qtz carbonate vein at 53.25 - 53.6 57.0 - 59.95 moderate pervasive sericite qtz 81.1 - 174.55 unaltered 1% qtz veinlets. Grey to greenish grey fragments in dark green chloritic ash 174.55 - 218.7 fragments becoming weakly to moderately sericitic matrix still relatively	17.5 - 18.4 tr 1% diss py in vein 27.6 - 29.3 5-7% sulphides; primarily py with traces of galena and cp 29.3 - 30.05 - 1-2% py 30.05 - 32.3lena and cp 25% py; 1-2% galana; tr 1% cp in vein; tr light brown to colourless sph {32.3-45.15} «15-20% py» 15-20% py throughout with traces of galena, tetrahedrite (?) restricted to qtz veins 45.15 - 66.1 1-2% diss py - locally enriched in sericitic areas 57.0 - 59.95 7-8% diss py {66.1 - 239.4} «tr py» tr diss py except where otherwise noted 123.45 1mm wide stringer of chocolate brown sph associated with qtz veinlet 162.55 - 162.65 2-3% cp, tr tetrahedrite in qtz vein 182.1 - 182.95 2-3% py, tr galena associated with qtz veins and sericitic zones	21.8 - 45.15 alteration associated with qtz veins 45.15 - 81.1 primarily the fragments which are altered to yellow sericite 66.1 - 67.4 lost water, blocky core {95.25 - 96.35} «FLT» blocky core marking fault zone {172.7-178.3} «FLT» blocky core from 172.7 - 178.3 marks a fault zone

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		188.6 - 188.8 = fault gouge 199.85 - 200.3 - fault gouge {188.6-188.8} «FLT» 218.7 - 219.65 sericitic cht zone Bedding 238.0m = fault gouge and blocky core from 235.35 - 236.9 Contact sharp	 60	unaltered; 1-2% qtz carbonate veins throughout 219.65 - 236.9 sericitic fragments with zones of intense silic flooding and sericite at 219.9 - 220.2 220.7 - 221.15 222.55- 222.7 224.85- 225.55 {236.9 - 239.4} «intense ser + sil» becoming intensely sericitic and silicified	186.2 - 186.7 3-5% py tr galena, tr sph in q.v. and adjacent sericitic zone 218.7 - 219.65 1% diss py 219.2 - 220.2 2-3% py, tr galena and tetrahedrite 220.7 - 221.15 3% py 222.55 - 222.7 2-3% py, 2-3% cp, tr gal, tet 224.85 - 225.55 1-2% py tr galena 226.3 - 228.95 2-3% py tr 1% tet; tr galena	
239.40 TO 244.30	CHERT WITH ARGILLITE ZONES «CHT+ARG»	Colour - greenish grey to black Grain- fine grain Generally well foliated Fault gouge at 239.8 - 240.1 and 241.0 - 241.1 Bedding 242.0m = {239.8-240.1} «FLT» {241.0-241.1} «FLT»	 60 60	«intense sericite» pervasive sericite in cherty zones	tr diss py throughout 241.2 - 242.0 3-5% diss py	
244.30 TO 261.20	REA BRECCIA «CHT BX»	Colour - black Grain - fine grain Chert and argillite fragments in black to grey, fine grain argillic matrix		1-2% qtz veins	«10-15% py as SMS beds, 1-2% sp» thin semi-massive sulphide bands (up to 2cm wide) throughout and diss sulphides. Sulphides = sph (1-2%), py (10-15%) py occurs both in bands and as very fine grain matrix to fragments	
261.20 TO 277.40	MUDDY TUFF «MUT»	Colour - grey Grain - fine grain well bedded Bedding 262.6m = Bedding 264.0m = 268.5 - 268.8 chert fragments in argillic matrix	 60 50	pervasive silica flooding 265.7 - 266.9 qtz veining, silica flooding of tuff	«10-20% py» 261.2 - 265.7 20% py, 1-2% sph, tr cp, tet, gal. 2 types of pyrite - occurs as subhedral to anhedral blebs and as very fine grain host to blebs of py, sph 265.7 - 266.9 10% py, 2-3% sph, 1-2% tet. tr galena 266.9 - 268.1	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Bedding 267.8m =	60		10% py in black and cherty matrix, tr tetrahedrite in qtz-rich zones	
		269.7 - 271.8 black argillite and wacke			268.8 - 269.7 10% very fine grain py	
		Bedding 276.0m =	50		271.8 - 277.4 15% very fine grain py parallel to bedding	
		273.3 - 273.8 argillite				
277.40 TO 327.80	DEBRIS FLOW (MUDDY TUFF WITH MORE FRAGMENTS THAN USUAL) «MUT»	Colour - dark grey Grain size - fine grain Chert, argillite, wacke and the odd pyrite fragment in an argillite to wacke matrix. Also have the odd argillite bed		1% qtz veins	2-3% diss py throughout, medium grain py, sph and tet in qtz veins Best zones at: {279.35 - 279.5} «SMS» semi-massive py with 5% tet, gal - 70-80% sulphides 289.15 - 291.25 50% sulphides in qtz matrix with inclusions of argillite (20-30%) 45% = py, 1-2% = tetrahedrite; 3-5% light brown sph; tr cp, 1% galena	
		Bedding 291.7m =	50		291.25 - 294.8 15-20% very fine grain py as beds within argillic matrix, tr cp, sph, gal and tetrahedrite occur in qtz veinlets throughout unit	
		Bedding 293.5m =	45			
		Bedding 295.05m =	35		{294.8 - 295.5} «MS» massive pyrite with tr tetrahedrite interstitially; matrix to py cubes=qtz	
		Bedding 297.85m =	25		{295.05 - 297.85} «MS» massive py occurring as anhedral to subhedral cubes, tr-1% tetrahedrite interstitially; matrix to sulphides is qtz (<5%); tr sph at margins of massive py 298.4 - 299.85 20% very fine grain py as wisps and beds in moderately sericitic matrix	
					299.85 - 300.7 1% sph, 3-5% py, tr tetrahedrite? in qtz vein	qtz vein approximately parallel to core axis, have 60-70% pyritic argillite inclusions
		Bedding 300.7m =	35		{300.7 - 301.0} «MS» massive py 5% sph; 1-2% tetrahedrite qtz matrix; py and sph occur as subhedral to anhedral blebs (up to 3-4mm diameter) 301.0 - 302.05 10% qtz vein with 5% py, 1% tetrahedrite, tr cp	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Fault gouge periodically from 313.2 - 315.9 Bedding 315.5m = {313.2-315.9} «FLT»	20	310.2 - 311.5 10% qtz vein approx. parallel to CA	302.05 - 317.9 15-20% very fine grain pyrite in argillic matrix to debris flow frags. 310.3 - 311.5 1-2% py, tr-1% tet in q.v. 316.5 - 316.6 1% galena, tet in 1cm wide q.v., parallel to CA 317.9 - 320.3 15-20% mineralized qtz veins in pyritic (20% py) matrix - over interval have 3-5% sph, 2-3% galena 320.3 - 322.2 pyrite muddy sediment - 20-25% very fine grain pyrite 322.2 - 324.0 5% qtz veins in pyritic sediment - 1-2% sph, tr galena in qtz veins {324.0 - 327.0} «50% pyritic sed» 50% pyritic sediment inclusions in qtz veins, 5-7% sph, 2-3% galena tr tetrahedrite (?) associated with galena 327.0 - 327.8 10-15% very fine grain pyrite	324.0 - 327.0 looks like a breccia with qtz matrix
		Bedding 320.3 Bedding 321.0 m =	45 35			
327.80 TO 328.60	FAULT GOUGE «FLT»	Colour - grey				
328.60 TO 341.90	PYRITIC ARGILLITE TO WACKE «PY ARG»	Colour - dark grey Grain - fine grain Foliation at 331.0m = Locally well bedded with crosscutting foliation Bedding 331.0m = Bedding 335.4m = 341.9 - 342.3 fault gouge Foliation = Bedding 340.0m =	35 80 90 25 60	pervasively moderately sericitic 341.6 - 341.9 bull white quartz vein	{328.6 - 341.6} «10-15% py» 10-15% very fine grain pyrite as beds within muddy sediment = argillite	
342.30 TO 346.60	CHERT AND SERICITIC TUFF «CHT+SERT»	Colour - yellow grey Grain - fine grain Well foliated/bedded Bedding 346.0m = END OF HOLE	60	sericitic tuff interbedded with chert 1-2% qtz veins	1-2% diss py	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t		COMMENTS
BCD4226	27.60	29.30	1.70	.02	.33	.14	6.5	.01	.01	.01							.01	
BCD4227	29.30	30.05	0.75	.019	.04	.04	7.8	.02	.01	.01							.01	
BCD4228	30.05	31.20	1.15	.108	1.07	.29	5.7	.05	.01	.01							.01	
BCD4229	31.20	32.20	1.00	.016	.09	.10	6.4	.10	.01	.01							.01	
BCD4230	32.20	33.90	1.70	.014	.01	.02	2.6	.05	.01	.01							.01	
BCD4231	33.90	35.40	1.50	.01	.04	.02	5.8	.01	.01	.01							.01	
BCD4232	35.40	36.70	1.30	.009	.02	.01	2.2	.02	.01	.01							.02	
BCD4233	36.70	38.20	1.50	.008	.08	.25	4.3	.06	.01	.01							.02	
BCD4234	38.20	39.70	1.50	.01	.03	.01	2.0	.02	.01	.01							.01	
BCD4235	39.70	41.20	1.50	.012	.02	.01	2.1	.01	.01	.01							.01	
BCD4236	41.20	42.70	1.50	.010	.01	.01	2.3	.01	.01	.01							.01	
BCD4237	42.70	44.00	1.30	.013	.01	.01	2.0	.01	.01	.01							.01	
BCD4238	44.00	45.15	1.15	.014	.01	.01	1.2	.01	.01	.01							.01	
BCD4239	57.00	58.50	1.50	.014	.01	.01	1.2	.01	.01	.01							.01	
BCD4240	58.50	59.95	1.45	.013	.01	.01	1.0	.02	.01	.01							.01	
BCD4286	218.70	219.90	1.20	.016	.2	.49	2.4	.02	.01	.01							.01	
BCD4287	219.90	221.15	1.25	.018	.24	.16	1.5	.05	.01	.01							.01	
BCD4288	221.15	222.70	1.55	.096	.18	.11	1.4	.04	.01	.01							.01	
BCD4290	223.65	224.90	1.25															
BCD4289	224.85	226.30	1.45	.013	.06	.16	2.2	.10	.01	.01							.01	
BCD4290	226.30	227.50	1.20	.011	.03	.02	2.3	.01	.01	.01							.01	
BCD4291	227.50	228.95	1.45	.012	.32	.28	2.0	.12	.01	.01							.01	
BCD4301	246.00	247.50	1.50	.014	.11	.04	2.4	.01	.01	.01							.01	
BCD4302	247.50	249.00	1.50	.064	.33	.31	24.6	.02	.01	.01							.01	
BCD4303	249.00	250.50	1.50	.042	.13	.13	8.8	.01	.01	.01							.01	
BCD4304	250.50	252.00	1.50	.052	.36	.27	14.5	.10	.01	.01							.01	
BCD4305	252.00	253.50	1.50	.028	.14	.07	7.9	.08	.01	.01							.01	
BCD4306	253.50	255.00	1.50	.024	.56	.14	10.2	.16	.01	.01							.01	
BCD4307	255.00	256.50	1.50	.023	.22	.10	9.4	.22	.01	.01							.01	
BCD4308	256.50	258.00	1.50	.015	.07	.13	4.0	.20	.01	.01							.01	
BCD4309	258.00	259.50	1.50	.021	.18	.07	6.2	.21	.01	.01							.01	
BCD4310	259.50	261.20	1.70	.036	.24	.14	8.2	.24	.01	.01							.01	
BCD4292	261.20	262.70	1.50	.014	.17	.09	4.2	.15	.01	.01							.01	
BCD4293	262.70	264.20	1.50	.010	.01	.01	1.5	.05	.01	.01							.01	
BCD4294	264.20	265.70	1.50	.016	.27	.14	6.0	.20	.01	.01							.01	
BCD4295	265.70	266.90	1.20	.032	1.3	.72	14.6	.28	.01	.01							.01	
BCD4296	266.90	268.10	1.20	.022	.93	.30	6.2	.80	.01	.01							.01	
BCD4297	268.10	268.50	0.40	.082	.91	.55	18.0	.40	.04	.18							.01	
BCD4298	268.50	269.70	1.20	.010	.02	.02	1.7	.40	.01	.01							.01	
BCD4241	288.30	289.15	0.85	.01	.03	.02	.2	.05										
BCD4242	289.15	290.20	1.05	.126	4.67	2.30	18.0	.22	.06	.20							.01	
BCD4243	290.20	291.25	1.05	.09	4.32	1.86	13.0	.18	.02	.10							.01	
BCD4245	291.25	292.20	0.95	.022	.75	.83	5.6	.02										
BCD4244	293.80	294.80	1.00	.012	.07	.05	1.0	.04										
BCD4246	294.80	295.05	0.25	.325	.94	1.98	53.0	.40	.16	.15							.01	
BCD4247	295.05	296.40	1.35	1.35	.02	.06	.12	.2	.01									
BCD4248	296.40	297.85	1.45	.008	.02	.02	.30	.01										
BCD4249	297.85	298.40	0.55	.060	.52	.67	12.0	.23	.02	.01							.01	

Sample	From (m)	To (m)	Length (m)	CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t
BCD4250	298.40	299.40	1.00	.006	.02	.02	.20	.01								
BCD4276	299.85	300.70	0.85	.005	.21	.12	.30	.01								
BCD4277	300.70	301.00	0.30	.027	3.24	1.82	10.4	.02	.01	.01						.01
BCD4278	301.00	302.05	1.05	.010	.17	.28	.60	.01								
BCD4279	317.90	319.10	1.20	.057	2.03	.92	18.4	.04								
BCD4280	319.10	320.30	1.20	.018	.84	.52	6.0	.01								
BCD4281	322.20	323.10	0.90	.016	1.29	.21	2.2	.01								
BCD4282	323.10	324.00	0.90	.008	.10	.04	.20	.02								
BCD4283	324.00	325.00	1.00	.199	5.20	1.83	60.4	.20	.08	.16						.01
BCD4284	325.00	326.00	1.00	.031	3.00	1.43	26.5	.03	.02	.01						.01
BCD4285	326.00	327.00	1.00	1.05	1.64	.82	242.0	.24	.520	.24						.01

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4476	11.00	14.00	3.00	49.19	14.5	7.32	10.10	3.63	.03	10.99	.25	1.37	.005	.005	95	87	.005	97.39	
BCD4477	47.70	50.90	3.20	46.37	15.74	5.90	12.50	2.00	.12	12.73	.33	1.52	.009	.005	90	120	.015	97.25	
BCD4478	75.00	78.00	3.00	45.40	14.64	8.78	11.14	1.41	1.22	12.75	.30	1.55	.101	.005	73	112	.005	97.30	
BCD4479	111.90	114.90	3.00	46.69	15.08	6.91	11.20	3.17	.02	12.55	.28	1.52	.024	.005	77	72	.006	97.46	
BCD4480	142.30	145.40	3.10	44.77	16.60	6.14	11.67	2.83	.04	13.34	.28	1.62	.010	.006	87	84	.007	97.32	
BCD4481	175.40	178.30	2.90	50.55	16.52	4.10	10.45	3.17	.03	11.02	.23	1.40	.031	.005	92	110	.005	97.51	
BCD4482	206.30	209.40	3.10	45.25	15.07	7.33	12.28	1.13	.01	14.08	.33	1.62	.005	.006	100	270	.170	97.27	

INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 3121
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 697.10N
EAST: 9529.35W
ELEV: 1680.19

ALTERNATE COORDS GRID: FIELD
NORTH: 6+70N
EAST: 95+ 0W
ELEV: 1671.00

COLLAR DIP: -65° 0' 0"
LENGTH OF THE HOLE: 270.40m
START DEPTH: 0.00m
FINAL DEPTH: 270.40m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: September 17, 1986
DATE COMPLETED: September 20, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: 3.4 LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
88.70	-	-63° 0'	ACID	OK		-	-	-	-	-	
105.50	-	-63° 0'	ACID	OK		-	-	-	-	-	
184.00	-	-60° 0'	ACID	OK		-	-	-	-	-	
218.50	-	-60° 0'	ACID	OK		-	-	-	-	-	
267.30	209° 0'	-66° 0'	TRO-PARI		suspect	-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.00	OVERBURDEN «OB»					
3.00 TO 199.45	MAFIC PYRO-CLASTIC FLOW «MPRYO»	Colour - light green with buff yellow fragments Grain Size - fine grained - m.g. Lapilli and block size fragments in ashy matrix; slightly flattened in foliation plane 16.5 - 17.4 - fault gouge 18.0 - 18.35 - fault gouge Bedding 19.7 m = {29.1 - 30.7} «FLT» blocky core and fault gouge 33.45 - 33.85 - fault gouge Bedding 49.0m = Bedding 61.5m = Bedding 67.0m = 71.1 - 71.3 - fault gouge Bedding 74.0m = Bedding 87.0m = {89.9 - 90.4} «FLT» fault gouge and blocky core {92.95 - 93.0} «FLT» fault gouge Bedding 101.0m = {102.6 - 102.7} «FLT» fault gouge Bedding 118.0m = Bedding 125.8m = {134.9 - 135.05} «FLT» fault gouge with tr carb vein fragments containing galena & pyrite Bedding 146.5m = {154.1 - 163.7} «FLT» Bedding 156.0m = well foliated, more ashy zone Bedding 163.0m = fault gouge at Bedding 170.0m = {157.0 - 157.1} «FLT» 183.4 - 183.9 - fault gouge Bedding 185.0m = {189.2 - 190.0} «FLT» fault breccia with silicified matrix Bedding 198.8 m =	65 75 70 70 70 70 65 70 70 65 70 70 75	fragments are pervasively sericitic quartz veins at: 6.0 - 6.15 6.7 - 7.3 - bull white 15.2 - 17.4 33.85 - 35.0 98.2 - 103.9 fragments a buff yellow colour due to pervasive sericitization qtz veins at 91.2 - 91.5 92.0 - 92.45 93.6 - 95.8 95.8 - 97.3 intense sericite with pervasive qtz veins 103.9 - 154.1 relatively unaltered grey fragments in fine grained green chloritic, ashy matrix. 1% qtz veins 154.1 - approx 187.1 pervasive carb + qtz veining parallel to foliation (10-15% veins) 183.4 - 186.4 pervasive light green sericite 190.0 - 199.45 pervasively silicified with weak to moderate sericite	tr py throughout except where noted below: 6.0 - 6.15 5% cp, gal sph in vein 15.2 - 17.4 - tr diss py 17.4 - 18.0 - 2-3% diss py 33.45 - 33.85 5% py, tr galena and cp in fault gouge 33.85 - 35.0 5% diss py in quartz veins 35.0 - 41.05 - 7-8% diss py 91.5 - 92.0 1-2% py 92.0 - 92.45 1-2% py, tr galena 95.8 0 97.3 3-5% py 131.7 - 131.8 sph, galena, cp (total sulphides = 30%) in qtz carb vein 134.8 5 cm wide carb vein wth py, cp, galena 162.0 - 163.7 3-5% diss py 163.7 - 199.45 1% diss py 180.0 7cm wide carb veins with sph & galena	8.2 - 11.3 core tube mislatch - missing 1.8m of core 48.3 - 59.1 blocky core marks a fault zone - locally fault gouge within the zone 142.2 - 154.1 blocky core with fault gouge locally parallen to fault zone

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
199.45 TO 202.20	CHERT WITH SERICITIC WISPS «CHT»	Colour - yellow-grey Grain Size - fine grained Contacts sharp - gouge (1-2cm) at both upper and lower contacts		Sericitic wisps throughout altered tuffaceous material	3-5% fine grained pyrite with tr cp, sph and tetrahedrite?	
202.20 TO 230.40	MUDDY PYRITIC TUFF «MUT+py»	Colour - grey Grain Size - fine grained weakly foliated Bedding 203.0m = 204.35 - 204.7 black argillite with grey cherty interbeds 204.7 - 230.4 muddy pyritic tuff with grey chert interbeds. Pyrite is very fine grained and very finely bedded Bedding 210.5m = fault gouge intermittantly from 215.3 - 216.45 Bedding 220.0m = 222.4 - 224.2 fault gouge Bedding 229.0m = - wisps of argillite in muddy tuff with 0.4m of contact	60 70 60 50	pervasively silicified from 202.2 - 204.35 204.7 - 230.4 weakly sericitic	«5-30% py in beds» 202.2 - 204.35 10% py as very f.g. wispy beds and disseminations tr-1% galena, tetrahedrite, tr sph and 2-3% reddish light brown specks = sph? or leucoxene, tr arsenopyrite 204.7 - 206.3 1-2% very fine grained py 206.3-208.7 20% py 208.7 - 217.9 5-7% very fine grained py with the odd speck of sph 217.9 - 222.4 10-15% py - occurs as very fine grained beds and coarser crystals which occur in beds; tr retrahedrite interstitially to this coarser grained pyrite 222.4 - 226.2 5% very fine grained bedded py 226.2 - 230.4 25-30% very fine grained bedded pyrite	
230.40 TO 238.15	ARGILLITE «ARG»	Colour - black Grain Size - very fine grained Well bedded with the odd sandy (wacke) layer Bedding 235.0m = Bedding 238.0m = Contact sharp	70 80	none	«tr py, asp» the odd thin (1-2cm) pyrite bed 237.8 1-2% arsenopyrite crystals over 2cm	
238.15 TO 259.90	PYRITIC MUDDY TUFF «MUT+py»	Well bedded Fault gouge at: 239.2 - 240.2 «FLT» 243.0 - 244.2 «FLT» 244.4 - 244.55 «FLT» 249.6 - 249.8 «FLT» Bedding 248.0m=	45	pervasively sericitic with 5% qtz veins throughout	«10-15% py, diss sph» 10-15% very fine grained pyrite generally in beds 241.1 - 241.2 tr tetrahedrite in silica-enriched zone 244.55 - 259.9	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		245.4 - 259.9 - 2-3% grey chert fragments in muddy pyritic tuff matrix Bedding 253.0m=	80		tr sph, gal, cp, 1-2% tet associated with coarser grained pyrite (10-15%)	
259.90 TO 270.40	CHERT WITH SERICITIC TUFF <CHT+SERT>	Colour - greyish yellow Grain Size - fine grained Well bedded Bedding 265.0m= Bedding 270.0m= END OF HOLE	70 70	sericitic wisps throughout chert	1-2% diss py	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD4311	33.45	35.00	1.55	.007	.09	.08	2.0	.01									
BCD4312	35.00	36.50	1.50	.003	.01	.01	.01	.01									
BCD4313	36.50	38.00	1.50	.002	.01	.01	.04	.01									
BCD4314	38.00	39.50	1.50	.003	.01	.01	0.1	.01									
BCD4315	39.50	41.05	1.55	.005	.01	.02	0.6	.02									
BCD4316	199.45	200.90	1.45	.004	.02	.02	0.2	.01									
BCD4317	200.90	202.20	1.30	.023	.04	.06	2.7	.02									
BCD4318	202.20	203.20	1.00	.008	.30	.10	4.0	.01									
BCD4319	203.20	204.35	1.15	.009	.02	.01	3.2	.03									
BCD4320	217.90	219.40	1.50	.041	.08	.08	22.0	.018									
BCD4321	219.40	220.90	1.50	.016	.03	.03	11.8	.04									
BCD4322	220.90	222.40	1.50	.007	.01	.01	5.1	.02									
BCD4323	227.70	229.20	1.50	.005	.02	.01	2.0	.30									
BCD4324	240.20	241.60	1.40	.053	.36	.31	15.9	.04									
BCD4325	241.60	243.00	1.40	.020	.34	.17	12.0	.34									
BCD4327	244.40	245.80	1.40														
BCD4326	244.55	246.10	1.55	.019	.24	.15	6.3	.12									
BCD4327	246.10	247.70	1.60	.019	.32	.12	3.2	.03									
BCD4328	247.70	249.20	1.50	.023	.23	.18	3.7	.14									
BCD4329	249.20	250.70	1.50	.065	.24	.20	9.0	.04									
BCD4330	250.70	252.20	1.50	.029	.38	.24	8.1	.03									
BCD4331	252.20	253.70	1.50	.010	.09	.09	4.3	.20									
BCD4332	253.70	255.20	1.50	.008	.02	.01	0.2	.02									
BCD4333	255.20	256.70	1.50	.184	1.13	.64	20.4	.26									
BCD4334	256.70	258.20	1.50	.012	.62	.16	4.2	.17									
BCD4335	258.20	259.90	1.70	.020	1.30	.82	12.3	.26									

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4483	23.50	26.50	3.00	41.17	16.67	8.06	12.44	1.55	0.81	14.5	0.31	1.77	.030	.006	98	118	.006	97.33	
BCD4484	60.00	63.10	3.10	48.22	14.94	7.25	11.17	2.14	0.01	11.95	0.03	1.41	.006	.005	99	91	.019	97.39	
BCD4485	105.50	108.40	2.90	49.55	13.93	9.00	9.41	2.61	0.01	10.85	0.32	1.34	.005	.005	152	1160	.064	97.09	
BCD4486	148.40	151.50	3.10	50.95	14.51	4.21	12.64	1.45	0.01	11.85	0.28	1.44	.005	.005	94	104	.008	97.34	
BCD4487	175.90	178.90	3.00	32.29	18.18	14.63	14.54	0.19	1.63	13.16	0.53	2.01	.057	.011	28	113	.005	97.24	

MINNOVA INC.

HOLE NUMBER: RG79 | DRILL HOLE RECORD | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 697.73N
EAST: 9529.37W
ELEV: 1680.10

ALTERNATE COORDS GRID: FIELD
NORTH: 6+70N
EAST: 95+ 0W
ELEV: 1671.00

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 286.50m
START DEPTH: 0.00m
FINAL DEPTH: 286.50m

COLLAR AZIMUTH GRID: 180° 0' 0"

COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: September 20, 1986
DATE COMPLETED: September 23, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: 3.4m LEFT IN HOLD
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
25.55	-	-88° 0'	ACID	OK		-	-	-	-	-	
110.30	-	-87° 0'	ACID	OK		-	-	-	-	-	
177.10	-	-78° 0'	ACID	OK		-	-	-	-	-	
238.00	-	-86° 0'	ACID		suspect	-	-	-	-	-	
267.30	207° 0'	-69° 0'	TROPARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.40	OVERBURDEN «OB»					
3.40 TO 225.55	MAFIC PYRO- CLASTIC FLOW «MPYRO»	Colour - greenish grey Grain - fine - medium grained Bedding 8.2m Lapilli and block size fragments in fine grained ashy matrix. Bedding 19.0m = Fragments slightly stretched in plane of foliation Bedding 31.0m = Bedding 40.4m = Bedding 57.0m = Bedding 78.0m = Bedding 91.0m = Fault gouge at: 42.9 - 42.95 «FLT» 70.4 - 70.7 «FLT» 82.7 - 81.8 «FLT» Fault gouge at: Bedding 104.0m = 109.8 - 110.3 «FLT» 111.0 - 111.1 «FLT» 113.1 - 113.2 «FLT» 125.5 - 125.6 Bedding 122.0m = Fault gouge at: 137.1 - 137.2 «FLT» Bedding 140.0m = 149.6 - 149.65 «FLT» 150.4 - 151.5 «FLT» Bedding 155.0m = 167.5 - 198.7 Bedding 166.0m = Unit has a few fragments - primarily a fine to medium grained ash. Bedding 176.0 = Contact with fragment-rich part of unit is indistinct. Fault gouge at: Bedding 191.0m = 193.6 - 193.95 «FLT» 195.5 - 195.7 «FLT»	55 55 60 60 55 55 55 60 50 65 60 65 55 60	3.4 - 51.25 Fragments are pervasively moderately sericitic - light yellow in colour 8.9 - 26.8 10% qtz veins 22.3 - 25.4 silicified zone with green mica 25.4 - 43.55 pervasively silicified and sericitic qtz - carb vein at 33.9 - 36.3 51.25 - 123.7 becoming relatively unaltered, grey fragments in dark green, chloritic, ashy matrix, 1% qtz, carb veins 123.7 - 125.5 sericitic fragments 125.6 - 130.3 moderate to intense sericite alt with 10% qtz carb veining 130.3 - 137.1 weak sericite alteration 137.1 - 149.9 relatively unaltered fragments in chloritic ash 149.9 - 167.5 fragments becoming weakly sericitic 1-2% qtz in carb veins 167.5 - 198.7 pervasively chloritic and carbonate rich; 5-10% carb qtz. veins 196.5 - 198.4 pervasive carb-serepidote alteration 198.4 - 208.0	tr, diss py except where noted below 22.3 - 25.4 5.7% diss py 31.0 - 33.9 3-5% diss py 33.9 - 36.3 sulphides in vein - primarily py with traces of cp, sph, galena and tetrahedrite 36.3 - 453.55 7-8% py 125.6 - 127.3 3-5% py, tr galena 129.15 - 130.3 2-3% py, tr-1% galena, tr sph 156.6 - 156.75 2-3% sph, 1-2% galena in carb. vein 167.5 - 198.7 1% diss py	8.9 - 16.8 blocky core 19.9 - 25.6 core box dumped accidentally by assistant! 28.3 - 29.7 blocky core and fault gouge zone sampled in RG-78 approx. 20m up-dip 69.4 - 74.1 blocky core and fault gouge marks a fault zone blocky core from 194.4 - 196.1

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Bedding 217.5m = Bedding 223.0m = Contact sharp	55 65	fragments are buff yellow colour (weak to moderate sericite), matrix chloritic 1-2% qtz-carb veins 208.0 - 225.55 unit becoming more pervasive sericitic. 1-2% qtz-carb veins; sericitic alteration boundary diffuse.		
225.55 TO 232.30	CHERT «CHT»	Colour - grey Grain - fine grained Greyish white angular chert fragments in grey siliceous matrix Bedding 231.0m = Fault gouge zones at: 226.6 - 226.9 «FLT» 227.6 - 228.3 «FLT» 231.15 - 231.6 «FLT» 231.4 - 232.6 2-3% argillite fragments in chert Fault gouge at contact from 232.3 - 232.6	70	sericitic slips throughout unit	225.55 - 228.6 3-5% diss py tr sph, tet 228.6 - 229.5 25% sulphide, 5% cp, 2-3% tetrahedrite; 3-5% sph; 10-15% py; tr galena 229.5 - 231.7 3-5% py, tr sph and tetrahedrite 231.7 - 232.2 «30-50% py, tr leuco.» 30-50% py, tr-3% leucoxene 232.2 - 232.3 - none	
232.30 TO 254.30	MUDDY TUFF «MUT»	Colour - dark grey Grain Size - fine grained Well bedded Locally have fragments (2-3mm) stretched parallel to bedding matrix is very fine grained dark grey and generally pyritic Bedding 235.0m = Bedding 239.5m = Bedding 245.5m = Bedding 254.0m =	65 80 70 70	mildly sericitic and locally siliceous "silica flooding"	«10-15% py; tr sp, tet» 10-15% very fine grained pyrite occurs as beds and small (2-3mm) fragments stretched parallel to foliation tr sph and tetrahedrite in more siliceous area (tr-1%)	
254.30 TO 259.50	BLACK ARGILLITE WITH BEDS OF MUDDY PYRITIC TUFF «ARG+MUT+py»	Colour - argillite-black, muddy tuff - grey Grain Size - fine grained Argillite is graphitic along bedding planes; 5-10% grey f.g. wacke fragments in f.g. matrix Bedding 255.1m = pyritic muddy tuff beds with argillite fragments at: 255.55 - 257.3 259.2 - 259.3	70	254.3 - 254.65 qtz vein with argillite fragments	«1-2% py» 5-10% very fine grained pyrite in muddy tuff sections 1-2% py diss in argillite	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
259.50 TO 286.50	MUDDY TUFF «MUT»	Colour - grey Grain Size - fine grained debris flow texture with fine grained grey chert fragments (5-10%) and the odd black argillite fragment. Bedding 267.0m = matrix = fine grained greyish black pyritic tuff 269.7 <1% fragments, i.e., has a more tuffaceous/ sediment look to unit fault gouge at: 270.8 - 271.55 «FLT» 271.9 - 272.2 «FLT» 276.5 - 281.2 «FLT» Bedding 275.0m = 285.3 - 286.5 «FLT» Bedding 285.0m = END OF HOLE	 55 60 60	2-3% qtz veins - pervasively sericitic along foliation planes	«15-20% PY» 15-20% very fine grained pyrite in muddy tuff matrix throughout 263.1 - 263.7 2-3% sph and tr-1% tetrahedrite	 272.7 - 276.5 blocky core with thin fault gouge zones 281.2 - 285.3 blocky core

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD4336	125.60	127.30	1.70				1.6	.025			36	1330	220				
BCD4337	129.15	130.30	1.15	130.3			3.7	.015			2900	1640					
BCD4338	225.55	227.00	1.45	.001	.01	.01	.4	0.01									
BCD4339	227.00	228.60	1.60	.002	.04	.01	.2	.02									
BCD4340	228.60	229.50	0.90	1.75	2.03	1.16	125	.38									
BCD4341	229.50	230.60	1.10	.033	.025	.18	5.4	.04									
BCD4342	230.60	231.70	1.10	.012	.01	.02	1.9	.01									
BCD4343	231.70	232.20	0.50	.03	.17	.14	12.6	.02									
BCD4344	246.00	247.50	1.50				5.4	.03			140	90					
BCD4345	260.20	261.70	1.50	.003	.01	.01	1.8	.01									
BCD4346	261.70	263.10	1.40	.007	.02	.03	4.3	.02									
BCD4347	263.10	263.70	0.60	.021	1.46	.67	27.4	.01									
BCD4348	263.70	265.20	1.50	.004	.04	.02	4.1	.02									

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4488	93.60	96.60	3.00	47.12	15.03	7.44	10.94	2.55	0.01	11.72	0.23	1.95	.092	.009	80	78	.005	97.09	
BCD4489	139.60	142.30	2.70	51.56	14.06	8.03	9.12	2.77	0.02	10.31	0.31	1.37	.008	.005	75	103	.006	97.48	
BCD4490	175.90	178.90	3.00	46.40	16.30	7.38	10.24	2.96	0.01	12.19	0.26	1.56	.005	.007	84	106	.009	97.32	
BCD4491	208.00	211.10	3.10	45.76	15.58	8.10	11.74	1.37	0.11	12.33	0.38	1.98	.009	.009	73	195	.019	97.39	

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REAI
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 629.86N
EAST: 9414.03W
ELEV: 1581.58

ALTERNATE COORDS GRID: FIELD
NORTH: 94+ 0N
EAST: 6+20W
ELEV: 1681.00

COLLAR DIP: -60° 0' 0"
LENGTH OF THE HOLE: 242.90m
START DEPTH: 0.00m
FINAL DEPTH: 242.90m

COLLAR GRID AZIMUTH: 173° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 218° 0' 0"

DATE STARTED: September 23, 1986
DATE COMPLETED: September 26, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: 67D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
35.70	-	-62° 0'	ACID	OK		-	-	-	-	-	
92.00	-	-61° 0'	ACID	OK		-	-	-	-	-	
126.80	-	-60° 0'	ACID	OK		-	-	-	-	-	
211.80	-	-58° 0'	ACID	OK		-	-	-	-	-	
239.50	212° 0'	-57° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 12.50	OVERBURDEN «OB»					
12.50 TO 189.30	MAFIC PYRO-CLASTIC FLOW «MPYRO»	Colour - greenish grey Grain Size - fine grained Lapilli and block sized fragments in fine grained ash; fragments, are slightly stretched in the foliation plane Bedding 26.0m =	70	12.5 - 18.9 fragments weakly sericitic - buff yellow in colour 18.9 - 111.4 relatively unaltered grey fragments in fine grained dark green chloritic ashy matrix 1-2% qtz carb veins	tr diss py throughout 37.85 - 37.9 1% cp, 1% tet in qtz-carb vein 38.1 - 38.35 1% py, tr cp, tetrahedrite in qtz-carb vein	12.5 - 14.7 core blocky with the odd thin zone of fault gouge
		Fault gouge at: 42.2 - 42.4 «FLT» 44.1 - 44.6 «FLT» 46.8 - 48.0 «FLT» Bedding 49.0m =	65			
		57.6 - 57.8 «FLT» Bedding 55.0m =	60			
		59.4 - 59.7 «FLT» 61.0 - 61.2 «FLT» Bedding 62.0m =	80			
		76.4 - 76.6 «FLT» Bedding 67.5m =	65			
		78.3-118.9 «MAJOR FLT» 78.3 - 118.9 - fault zone Bedding 97.0m =	70		101.4 - 1cm stringer of tetrahedrite and cp associated with carb vein.	78.3 - 118.9 major fault zone - very blocky core and fault gouge throughout
		111.4 - 189.3 well foliated zone Bedding 114.0m = - has a more ashy look ((5% fragments) siliceous Bedding 122.0m =	70 70	111.4 - 127.0 pervasive qtz-carb veining (10-15%0 of sericitic-chloritic alteration	111.4 - 127 1-2% dism py in altered zone	
		Bedding 132.5m =	65	127.0 - 148.5	127.0 - 148.5	
		Bedding 139.3m =	70	chloritic ash with 10-15% carb veins 148.5 - 189.3 core has mottled look due to pervasive mild sericite alteration + minor chlorite & 5-10% qtz + carb veining & 1% qtz fragments (subrounded) up to 1-2cm diameter) - also have 2-3% yellow coloured sericitic fragments	1% diss py 148.5 - 175.45 tr tetrahedrite in qtz veins; 1-2% diss py 157.0 - 1cm vide stringer of py & tetrahedrite	blocky core at 143.5 - 146.9
				179.5 - 186.1 1% light green very soft mineral occurs in einlets = talc?	175.45 - 175.7 «30-40% py tr cp, tet» 1% cp, 30-40% py, tr tetrahedrite - associated with qtz vein 175.9 - 176.0 «40% py; tr cp, tet» tr-1% cp, tr tet, 40% py in qtz vein	
		177.2-177.4 «FLT» 177.2 - 177.4 - fault gouge				
		177.2 - 179.5 possible siliceous tuff - 1% sericitic fragments near lower contact			177.2 - 179.5 30% py-locally as semi-massive bands, tr-1% cp, tr tetrahedrite 179.5 - 181.3	
		Bedding 186.0m =	50		2-3% diss py tr sph & tetrahedrite in more siliceous areas & qtz veins 181.3 - 189.3	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
					1-2% diss py	
189.30 TO 190.45	CHERT BRECCIA «CHT BX»	Colour - grey with greyish black matrix Grain Size - fine grained 10-15% grey chert fragments stretched slightly in plane of foliation matrix = grey to black wacke to argillite Contacts sharp		189.9 - 190.25 qtz vein with sericitic slips	1-2% diss py	
190.45 TO 191.80	PYRITIC MUDDY TUFF «MUT + py»	Colour - grey Grain Size - very fine grained Finely bedded Interbedded with black argillite on mm scale Contact sharp			50% very finely bedded pyrite in siliceous matrix	
191.80 TO 194.35	BLACK ARGILLITE «ARG»	Colour - black Grain Size - fine grained 3-5% wispy gragments of pyritic, muddy tuff & wacke in very fine grained black matrix (graphitic) Bedding 192.0m = Contact sharp	65	tr qtz veins	tr cp; py	
194.35 TO 202.45	MUDDY TUFF «MUT»	Colour - grey Grain Size - fine grained Finely bedded Bedding 195.5m = {196.1 - 196.6} «FLT» fault gouge and blocky core {201.1-202.45} «FLT» 201.1 - 202.45 - fault gouge	75	pervasively sericitic 197.05 - 198.35 more siliceous zone with 1-2% reddish brown leucoxene and 5% emerald green mica (fuchsite) 198.35 - 199.3 qtz vein with 5% sericitic fragments 199.7 - 2006 white qtz vein with 5% sericitic (yellowish grey) fragments	194.35 - 197.05 15-2-% very finely bedded pyrite 197.05 - 198.35 3-5% py 190.35 - 199.33 1% py in fragments 199.3 - 199.7 10% py, tr tet 199.7 - 200.6 1% py associated with sericitic frags. 200.6 - 202.45 5-1-% very fine grained py with tr tetrahedrite in qtz veins	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
202.45 TO 209.60	CHERT «CHT»	Colour - brownish grey Grain Size - fine grained Well bedded Bedding 203.0m = Bedding 205.8m = Bedding 208.8m =	60 55 70	pervasive brownish yellow sericite visps and 2-3% qtz veins larger qtz veins at: 202.4 - 202.6 203.6 - 204.2	202.45 - 209.6 15-20% fine grained pyrite; tr cp, tet primarily in qtz veins	pyrite occurs as fine grained beds and disseminated cubes
209.60 TO 212.60	PYRITIC MUDDY TUFF «MUT + py»	Colour - grey Grain Size - very fine grained Contains 1-2% grey chert fragments - generally very finely bedded Fault gouge at: 209.6 - 210.2		pervasively sericitic	15-20% very fine grained bedded pyrite	
212.60 TO 218.40	CHERT «CHT»	Colour - grey Grain Size - fine grained Well bedded Bedding 216.0m =	70	unaltered 216.7 - 218.4 white qtz vein	3-5% diss py cubes	
218.40 TO 225.60	REA BRECCIA «CHT BX»	Colour - greyish black Grain Size - fine grained Well-bedded, grey chert fragments in black cherty matrix		White qtz vein at: 219.1 - 221.0 221.0 - 224.2 pervasive qtz veining provides matrix to greyish black chert	218.4 - 219.1 2-3% diss py cubes 219.1 - approx. 221.0 1-2% py, tr sph in qtz vein 221.0 - 224.2 tr-1% py	
225.60 TO 237.90	ALTERED SEDIMENT OR MAFIC ASH (?) «CHT+WAK»	Colour - brownish grey Grain Size - fine grained Well-bedded - grey chert beds with the odd muddy tuff fragment Bedding 227.0 m = Bedding 233.8m = - interbeds of f.g. wacke Bedding 236.0m =	70 70 50	pervasively altered 3-5% reddish brown leucoxene occur as visps parallel to bedding 1-2% emerald mica (fuchsite) - locally weakly sericitic qtz veins at 225.6 - 226.55 228.05- 228.2 234.5 - 234.7 235.2 - 235.6 235.7 - 235.9 236.7 - 237.2	10% diss py, tr sph in qtz veins	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
237.90 TO 242.90	CHERT WITH SERICITIC TUFF «CHT+SERT»	Colour - greyish yellow Grain size - fine grained interbedded grey chert and yellow sericitic tuff Bedding 242.9m =	70	tuffaceous material is sericitic	1-2% diss py	
		END OF HOLE				

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD4349	156.80	158.30	1.50								115	1100	1041		2.0	20	
BCD4350	175.45	177.20	1.75	0.21	0.27	0.36	6.2	.03									
BCD4351	177.20	178.40	1.20	0.043	0.57	0.30	4.4	.02									
BCD4352	178.40	179.50	1.10	0.27	0.25	0.22	9.0	.01									
BCD4353	179.50	181.00	1.50								58	215	725		2.0	5	
BCD4354	181.00	182.50	1.50								74	1160	430		1.5	20	
BCD4355	197.05	198.35	1.30				0.2	.01									
BCD4356	198.35	199.70	1.35				0.2	.62									
BCD4357	199.70	201.10	1.40				0.2	.22									
BCD4358	205.00	206.50	1.50	0.026	0.08	0.08	4.8	.05									
BCD4359	206.50	208.00	1.50	0.012	0.07	0.08	2.0	.20									
BCD4360	208.00	209.60	1.60	0.044	0.06	0.20	8.4	.38									
BCD5542	228.20	229.70	1.50								87	102	108		1.6	70	
BCD5543	229.70	231.20	1.50								75	109	72		1.6	40	

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4492	38.70	41.50	2.80	48.8	14.79	6.33	10.93	2.39	0.01	12.48	0.27	1.54	.005	.005	96	87	.005	97.56	
BCD4493	72.20	75.30	3.10	47.2	14.88	7.25	11.00	3.77	0.01	11.58	0.26	1.44	.005	.005	82	68	.005	97.42	
BCD4494	111.90	114.00	2.10	50.9	15.29	5.77	10.59	1.84	0.93	10.65	0.28	1.19	.022	.005	90	155	.009	97.50	
BCD4495	148.50	151.40	2.90	44.6	14.82	10.56	11.76	2.56	0.51	10.45	0.65	1.50	.025	.005	135	175	.022	97.43	
BCD4470	232.00	235.00	3.00	52.71	18.69	1.75	3.13	0.61	3.77	13.66	0.34	2.30	.438	.012	45	99	.005	97.4	

MINNOVA INC.
DRILL HOLE RECORD

INPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 628.96N
EAST: 9413.95W
ELEV: 1681.52

ALTERNATE COORDS GRID: FIELD
NORTH: 94+ 0N
EAST: 6+20W
ELEV: 1681.00

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 311.80m
START DEPTH: 0.00m
FINAL DEPTH: 311.80m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: September 26, 1986
DATE COMPLETED: September 30, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
38.70	-	-86° 0'	ACID	OK		-	-	-	-	-	
102.70	-	-83° 0'	ACID	OK		-	-	-	-	-	
159.40	-	-80° 0'	ACID	OK		-	-	-	-	-	
217.30	-	-86° 0'	ACID			-	-	-	-	-	
247.80	-	-88° 0'	ACID			-	-	-	-	-	
311.79	-	-71° 0'	ACID	OK		-	-	-	-	-	
273.40	174°30'	-74° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 9.40	OVERBURDEN <OB>					Casing
9.40 TO 198.00	MAFIC PYRO-CLASTIC FLOW <MPYRO>	Colour - green Grain Size - fine grained Lapilli and block sized mafic fragments in fine grained ashy matrix - fragments slightly stretched parallel to foliation Fault gouge at: Bedding 38.0m = 46.5 - 46.6 <FLT> Bedding 49.0m = 48.0 - 48.3 <FLT> Bedding 57.5m = 50.7 - 50.9 <FLT> Bedding 64.0m = 91.6 - 91.8 <FLT> Bedding 79.0m = 123.2 -123.4 <FLT> Bedding 95.0m = 134.5 -134.6 <FLT> Bedding 101.0m = 151.5 -151.65 <FLT> Bedding 110.0m = 154.4 -154.6 <FLT> Bedding 126.0m = 159.6 -159.9 <FLT> Bedding 143.5m = 167.1 -167.3 <FLT> 173.1 - 181.7 Well foliated zone Bedding 180.0m = - more ashy	55 50 50 50 60 55 50 55 50 65 80	9.4 - approx 24.6 Fragments buff yellow in colour - weakly sericitic 1-2% qtz-carb veins throughout 24.6 - 130.9 Relatively unaltered. Chloritic ashy matrix to greenish grey mafic frags. 130.9 - 173.1 Less than 5% weakly sericitic fragments in grey matrix. 3-5% qtz-carb veinlets generally aligned parallel to foliation. 173.1 - 181.7 Pervasive carbonate veining (10-15%) 181.7 - 193.0 Core has mottled look - weak sericitic alteration with 5% qtz veins. 2-3% buff yellow mafic fragments. 193.0 - 198.0 Pervassive silicification 195.2 - 197.2 5% emerald green mica - fuchsite	Tr diss py	9.4 - 32.9 Extremely blocky core 134.5 - 166.8 Blocky core (fault zone)
					181.7 - 195.1 1-2% diss py 195.1-195.4 <minor sp,gn,tet, tr py> 1-2% sph, 1-2% tetrahedrite; 5% py in quartz vein 195.4 - 197.2 - 5% py	
198.00 TO 205.60	CHERT BRECCIA <CHT BX>	Colour grey - Grain Size - fine grained Grey chert fragments in a fine grained grey silicified and sericitic matrix. Fault gouge at: 201.4 - 202.8		Matrix pervasively sericitic and silicified.	1-2% diss py throughout.	Contact between mafic pyroclastic flow and chert breccia indistinct - chert breccia may just be extremely silicified mafic pyroclastic.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
205.60 TO 207.20	REA BRECCIA «CHT BX»	Colour - black Grain Size - fine grained Greyish black chert fragments in fine grained black, cherty matrix		Unaltered	205.6 - 206.7 tr-1% diss sph, tr tet associated with diss sph, py (10-15%)	205.9 - 207.5 Blocky core
207.20 TO 221.00	PYRITIC MUDDY TUFF «MUT+py»	Colour - grey Grain Size - fine grained Tr chert and/or wacke fragments (0.5cm x 2.33mm) throughout - finely bedded Fault gouge at: 208.2 - 209.0 «FLT] Bedding 210.0m = 210.0 - 210.1 «FLT] Bedding 215.5m =	 60 60	Pervasively sericitic along foliation/ bedding planes - locally siliceous	10-15% very fine grained bedded py tr sph, tetrahedrite in siliceous zones	
221.00 TO 221.70	ARGILLITE «ARG»	Colour - black Grain Size - fine grained Whole unit - very blocky core			Tr sph in qtz vein	
221.70 TO 245.50	MUDDY TUFF «MUT»	Colour - grey Grain Size - fine grained 221.7 - 228.5 Debris flow - fragments of wacke, chert and argillite in muddy tuff matrix Bedding 224.0m = - lower contact of debris flow indistinct Bedding 231.0m = Fault gouge at: 230.0 - 230.7 «FLT] 231.55-232.0 «FLT] 236.6 - 237.8 «FLT] Bedding 239.0m = 240.5 - 240.8 «FLT] 241.95- 242.05 «FLT] 243.1 - 243.5 «FLT] Bedding 244.0m = 245.0 - 245.5 «FLT] Contact sharp at 45 degrees to CA.	 60 50 50 30	Pervasively sericitic 1-2% qtz veins	5-10% very fine grained bedded pyrite	
245.50 TO 258.50	REA BRECCIA «CHT BX»	Colour - black Grain Size - fine grained Grey chert fragments chastically arranged in black cherty matrix Bedding 245.5m = Bedding 250.5m = - locally graphitic along fracture planes Bedding 255.5m =	 45 40 20	2-3% quartz veins	2-3% diss py cubes tr sph in qtz veins	Low core angles = folding? or dragging due to proximity to a fault. Blocky core at: 246.0 - 246.7 repetition of Rea Breccia due to

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		- core angles within unit are locally very shallow {248.50} <FLT> Fault gouge at contact				faulting
258.50 TO 260.70	ALTERED MAFIC ASH <SERT>	Colour - grey Grain Size - fine grained Well bedded Bedding 259.5m = Fault gouge at: {260.25 - 260.7} <FLT>	55	3-5% reddish brown leucoxene as wisps parallel to bedding 260.25 - 260.7 Green mica (fuchsite) associated with fault gouge	2-3% diss py	Similar to unit overlying Rea Breccia in RG-80
260.70 TO 263.55	DEBRIS FLOW <MUTDF>	Colour - dary grey Grain Size - fine grained Consists of abundant (70-80%) fragments in fine grained grey matrix - fragments consist of vacke, chert, argillite pyritic muddy tuff Bedding 262.7m = - aligned parallel to bedding/foliation - arrangement of fragments chaotic	70			
263.55 TO 294.90	PYRITIC MUDDY TUFF <MUT+py>	Colour - grey Grain Size - fine grained Generally well bedded - locally looks cherty Fault gouge at: {263.55 - 265.5} <FLT> Bedding 266.0m = {261.1 - 266.3} <FLT> Bedding 271.8m = Fault gouge at: {273.4 - 273.6} <FLT> Bedding 273.0m = Bedding 275.3m =	60 60 60 50	Pervasively siliceous and sericitic	263.55 - 266.4 10-25% very fine grained bedded py, tr cp, tetrahedrite in siliceous areas 266.4 - 267.8 8-10% py; 1% sph and 1% tetrahedrite in siliceous areas 267.8 - 268.4 approx. 5% very fine grained py 268.4 - 269.1 80% pyrite with marcasite nodules occurring in beds (2-4cm thick) 269.1 - 271.0 20% very fine grained py, tr sph, tet 271.0 - 271.8 70-80% py in siliceous matrix 271.8 - 274.3 20-25% very fine grained py; tr sph,tet 274.3 - 275.7 30-35% py (fine grained beds of m.g. cubes in siliceous areas); 3% sph,	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		{276.5 - 285.6} <ARG+WAK+CHT> Debris flow chert, argillite Bedding 281.0m wacke fragments in muddy tuff matrix - locally well bedded. Fault gouge at {277.7-278.0} <FLT> Bedding 287.0m= {283.6-283.8} <FLT> 285.6 - 294.9 fine grained muddy tuff with quartz veins.	50 45	White quartz veins at: 287.3 - 287.9 288.3 - 288.7 289.2 - 290.9 292.3 - 294.4 294.5 - 294.9	2% tetrahedrite 275.7 - 285.6 10% very fine grained py (typical of muddy tuff) 285.6 - 294.9 5-10% very fine grained py 292.3 - 294.4 tr py, cp in quartz veins 294.5 - 294.9 tr galena in quartz veins	Debris flow similar to that at 260.7 - 263.55 except for muddy tuff matrix
294.90 TO 311.80	SEDIMENTS <ARG+WAK+> <CHT>	Colour - greyish black Grain Size - fine grained Interbedded black argillite, wacke and grey chert Bedding 298.0m= 70 - well bedded Bedding 301.5m= 50 - locally have chert fragments in argillite and wacke matrix Bedding 310.0m= 70 Fault gouge at: {301.55 - 301.8} <FLT> {303.7 - 303.85} <FLT> END OF HOLE		Locally weakly sericitic	1-2% diss py	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD4372	195.10	196.10	1.00	0.109	1.48	0.96	50.0	0.2									
BCD4373	196.10	197.20	1.10	0.031	0.10	0.07	4.4	0.06									
BCD4374	205.60	206.40	0.80	0.031	0.42	0.12	7.8	0.05									
BCD4361	263.55	265.00	1.45	0.04	0.16	0.18	14.2	.30									
BCD4362	265.00	266.40	1.40	0.01	0.03	0.05	6.0	.13									
BCD4363	266.40	267.80	1.40	0.092	1.07	0.41	14.0	.27									
BCD4364	267.80	268.40	0.60	0.010	0.11	0.06	8.1	.26									
BCD4365	268.40	269.10	0.70	0.026	0.01	0.05	95.6	2.00									
BCD4366	269.10	271.00	1.90	0.01	0.13	0.06	14.8	.76									
BCD4367	271.00	271.80	0.80	0.016	0.02	0.07	32.4	1.49									
BCD4368	271.80	273.10	1.30	0.15	0.93	0.08	6.5	.28									
BCD4369	273.10	274.30	1.20	0.012	0.19	0.08	4.1	.12									
BCD4370	274.30	275.70	1.40	0.078	1.80	1.18	10.8	.51									
BCD4371	275.70	277.20	1.50	0.013	0.02	0.04	3.6	.53									

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4496	117.00	120.10	3.10	51.38	15.22	4.24	9.99	2.76	0.03	11.91	0.21	1.57	0.04	.005	78	87	.005	97.37	
BCD4497	147.50	150.40	2.90	46.68	15.11	10.38	8.76	2.85	0.07	11.71	0.30	1.47	.005	.005	101	96	.005	97.35	
BCD4498	182.00	185.00	3.00	32.79	18.46	10.5	15.05	0.58	1.88	14.52	0.91	2.24	.071	.010	60	350	.018	97.03	

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 735.07N
EAST: 9627.59W
ELEV: 1679.73

ALTERNATE COORDS GRID: FIELD
NORTH: 7+15N
EAST: 96+ 0W
ELEV: 1671.00

COLLAR DIP: -77° 0' 0"
LENGTH OF THE HOLE: 294.70m
START DEPTH: 0.00m
FINAL DEPTH: 294.70m

COLLAR GRID AZIMUTH: 175° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 220° 0' 0"

DATE STARTED: October 1, 1986
DATE COMPLETED: October 5, 1986
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: NO

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

CONTRACTOR: G&D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
62.20	-	-74° 0'	ACID	OK		-	-	-	-	-	
121.30	-	-69° 0'	ACID	OK		-	-	-	-	-	
181.40	-	-68° 0'	ACID	OK		-	-	-	-	-	
236.80	-	-66° 0'	ACID	OK		-	-	-	-	-	
294.70	-	-64° 0'	ACID	OK		-	-	-	-	-	
288.60	199°30'	-67° 0'	TRO-PARI		dip suspect	-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.00	OVERBURDEN «OB»					Casing
3.00 TO 232.10	MAFIC PYRO-CLASTIC FLOW «MPYRO»	Colour - greenish grey Grain Size - fine to m.g. frags. f.g. matrix Lapilli and block size greenish grey fragments in fine grained, dark green ashy matrix - fragments stretched slightly in plane of foliation Fault gouge at: {90.15 - 90.25} «FLT» Some of fragments have 15-20% qtz-filled amygdules 151.5 - 151.8 - fault gouge 175.8 - 204.2 - ashy zone - strongly foliated fault gouge at: {186.6 - 285.0} «FLT» 204.2 - 232.1 lapilli tuff - greenish yellow frags Contact sharp at 80 degrees to CA.	Bedding 145.0m = Bedding 157.0m = Bedding 168.8m = Bedding 178.5m = Bedding 187.0m = Bedding 191.0m = Bedding 196.5m Bedding 200.0m = Bedding 217.0m = Bedding 227.0m = Bedding 231.0m =	60 60 70 65 75 75 65 70 70 65 70	1-2% qtz-carb veins 15.2 - 29.95 Fragments a buff yellow colour due to weak sericite alteration 29.95 - 31.05 Intense sericite alteration 31.05 - 34.8 Qtz vein with tr green fuchsite 34.8 - 43.2 Pervasive intense sericite-chlorite with 5% qtz veins 43.2 - 75.7 Fragments a buff yellow colour due to weak yellow colour due to weak sericite alteration 1-2% qtz-carb veins 75.7 - 170.5 Relatively unaltered grey mafic frags. in dary green chloritic, ashy matrix 2-3% qtz-carb veins throughout 170.5 - 175.8 weakly sericitic frags (2-3% qtz veins) 175.8 - 197.8 pervasive carb-chl-qtz alteration (approx. 10-15% carb-qtz veins) - locally carb blebs look like amygdules 197.8 - 204.2 intense carb-ser-chl-qtz - core a greenish yellow colour 204.2 - 223.75 pervasive moderate silicification & carb {223.75 - 232.1} «intense sil + ser» pervasive intensely silicified and sericitic	tr diss py 31.05 - 34.8 10% diss py 34.8 - 43.2 3-5% py & tr diss galena in qtz veins 43.2 - 175.8 tr-1% diss py 175.8 - 197.8 tr-1% diss py 213.65 - 216.4 10% py + tr sph and galena in quartz veinlets throughout zone 197.8 - 232.1 tr-1% diss py	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
232.10 TO 234.10	CHERT <CHT>	Colour - greenish grey to black Grain Size - fine grained Well bedded chert and chert breccia; locally the odd argillitic and sericitic tuff zone Fault breccia at: {232.9 - 233.35} <FLT> Bedding 233.5m = Contact sharp at 60 degrees to CA	70	233.35 - 234.1 sericitic tuff intermixed with grey and black chert	tr diss py	
234.10 TO 268.00	MUDDY TUFF <MUT>	Colour - grey Grain Size - fine grained Well bedded debris flow consisting of chert, argillite fragments in fine grained pyritic matrix Fault gouge throughout zone from 234.1 - 237.8 Bedding 238.0m = Bedding 242.0m = fault gouge at: 242.1 - 242.9 {242.1-242.9} <FLT> Bedding 242.7m = Bedding 245.0m = {254.0-254.25} <FLT> fault gouge at: 254.0 - 254.25 Bedding 260.5m = 263.1 - 268.0 finely bedded pyritic muddy tuff (no exotic fragments) Bedding 267.7m =	70 70 70 70 70	pervasive silica "flooding" & sericitic siliceous, sulphide zones at: 244.2 - 244.35 244.6 - 244.9 245.3 - 245.5 246.2 - 246.5 249.75 - 249.9 {263.1 - 268.0} <qtz veins> series of white qtz veins - major veins at: 263.6 - 264.3 264.5 - 264.7 265.75 - 265.9	Sph & tetrahedrite restricted to silicified areas. Host rocks = pyritic muddy tuff (15-20% py very finely bedded) 234.1 - 235.15 2-3% sph; 5-7% tetrahedrite (in part due to 2-3cm bands of semi-massive tetrahedrite at 234.55 - 234.65) 235.15 - 239.45 1% sph, tr-1% tetrahedrite 239.45 - 240.3 5% sph, 1% tetrahedrite 240.3 - 244.2 tr sph, tet in qtz veinlets 244.2 - 244.35 tr-1% sph, tr cp, tet, 2-3% py 244.6 - 244.9 2-3% sph, 1-2% tet, tr cp, 3-5% py {245.3 - 245.5} <40-50% sul> 40-50% sulphides, 20% sph, 20% py, 5% tetrahedrite {246.2 - 246.5} <50-60% sul> 50-60% sulphides, 5-7% sph, 5-7% tetrahedrite, tr cp, 40-50% py 249.75 - 249.9 7-8% tetrahedrite, 3-5% sph, 5% py 249.9 - 259.6 tr sph, tetrahedrite in siliceous veinlets throughout pyritic muddy tuff {263.1 - 268.0} <40% py, tr cp,tet,sph> 40% very fine grained bedded pyrite; tr cp, tetrahedrite and sph in qtz veins	intervals between these zones have tr sph, tet in qtz veinlets

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Contact sharp at 70 degrees to CA				
268.00 TO 286.70	SEDIMENTS «WAK+ARG»	Colour - grey to greenish grey with white qtz veins Interbedded wackes, greenish siltstones and argillites (locally graphitic) Bedding 269.5m = Bedding 281.0m = Fault gouge at: 282.2 - 283.0 «FLT» 285.5 - 285.6 «FLT» 286.2 - 286.3 «FLT»	55 65	5-10% white qtz veins with major qtz veins at: 268.75 - 271.9 «qtz veins» 285.6 - 286.2 «qtz veins»	tr diss py tr arsenopyrite in argillite	
286.70 TO 294.70	CHERT, SERICITIC TUFF AND ARGILLITE «CHT+SERT» «+ARG»	Colour - grey with yellowish wisps and black argillite Grain Size - fine grained Well bedded Bedding 288.6m = - argillitic beds more prevalent towards bottom of hole END OF HOLE	70	tuffaceous parts are pervasively sericitic	2-3% diss py	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD4408	213.65	215.00	1.35								90	7500	2800	3.5	35	495	
BCD4409	215.00	216.40	1.40								37	780	3050	1.8	25	360	
BCD4376	234.10	235.15	1.05	1.35	1.81	1.28	450	0.28	.80	.20							
BCD4377	235.15	236.60	1.45	0.078	0.39	0.22	26.2	0.14	.04	.02							
BCD4378	236.60	238.10	1.50	0.067	0.10	0.22	14.9	0.06	.03	.03							
BCD4379	238.10	239.45	1.35	0.058	0.10	0.11	12.8	0.10	.03	.01							
BCD4380	239.45	240.30	0.85	0.184	1.50	0.83	29.6	0.05	.07	.01							
BCD4381	240.30	241.80	1.50	0.016	0.01	0.06	4.9	0.01	.01	.01							
BCD4382	241.80	243.00	1.20	0.028	0.08	0.12	10.3	0.05									
BCD4383	243.00	244.20	1.20	0.038	0.03	0.03	8.9	0.06									
BCD4384	244.20	245.30	1.20	0.06	1.02	0.26	14.0	0.01	.03	.01							
BCD4385	245.30	246.50	1.20	0.10	1.64	1.29	32.8	0.08	.06	.01							
BCD4386	246.50	248.00	1.50	0.007	0.02	0.02	6.1	0.04									
BCD4387	248.00	249.50	1.50	0.056	0.08	0.08	14.3	0.02									
BCD4388	249.50	250.50	1.00	0.160	0.41	0.19	30.2	0.06									
BCD4389	250.50	252.00	1.50	0.008	0.01	0.01	3.4	0.01									
BCD4390	252.00	253.50	1.50	0.009	0.01	0.01	2.3	0.04									
BCD4391	253.50	255.00	1.50	0.021	0.03	0.02	5.9	0.03									
BCD4392	255.00	256.20	1.20	0.017	0.02	0.02	4.7	0.18									
BCD4393	256.20	257.30	1.10	0.201	0.39	0.20	62.3	0.40									

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	[illegible] %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4499	178.20	181.40	3.20	44.72	14.53	13.61	8.08	1.98	0.80	11.78	0.29	1.46	.046	.005	90	81	.005	97.29	
BCD4500	224.60	227.70	3.10	48.01	16.23	8.73	8.83	0.25	2.60	10.47	0.33	1.81	.137	.007	52	166	.006	97.41	

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 617.76N
EAST: 9948.64W
ELEV: 1502.72

ALTERNATE COORDS GRID: FIELD
NORTH: 99+33N
EAST: 6+10
ELEV: 1497.00

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 96.30m
START DEPTH: 0.00m
FINAL DEPTH: 96.30m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: October 6, 1986
DATE COMPLETED: October 6, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
65.80	-	-84° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 9.40	OVERBURDEN «OB»					Casing
9.40 TO 17.40	ALTERED MAFIC PYRO-CLASTIC FLOW «MPYRO»	Colour - Buff yellow Grain Size - fine grained Well foliated - intense alteration gives unit a cherty look Bedding 14.5m = -green mafic remnants seen at start of hole {16.0-18.6} «FLT» Fault gouge and block core from 16.0 - 18.6 obscured contact	45	«ser» Intense pervasive sericite and silicification	«3% py» 2-3% diss py	
17.40 TO 52.50	SEDIMENTS «WAK+ARG»	Colour - dark grey to black Grain Size - fine grained Interbedded wackes and graphitic argillites Bedding 19.0m = Bedding 23.0m = 33.4 - 52.5 Interbedded fine grained sericitic siltstone and quartzite Bedding 44.0m = Fault gouge at: 50.8 - 51.5 {50.8-51.5} «FLT»	35 50 55	1-2% qtz veins 33.4 - 52.5 pervasive sericite alteration bleaches rocks a light greenish yellow. Mineralized qtz veins (45-50%) from 36.35 to 49.75 geeen muchsite zones occur at: 45.45 - 46.2 47.8 - 48.2	20.4 - 20.6 - massive pyrite 3-5% py throughout - generally associated with argillic beds 33.4 - 36.35 3-5% py, tr tetrahedrite in quartzite and quartz veinlets {36.35 - 49.75} «10-15% sul» 10-15% total sulphides, 2% cp; 1-2% galena, 2% sph, 2% tetrahedrite - primarily in qtz veins 7-8% py in qtz veins and host rock - includes a 5cm vide bleb of massive cp at 47.5	sericitic alteration associated with qtz veining
52.50 TO 59.50	FAULT BRECCIA AND GOUGE «FLT BX»	Colour - black to grey Grain Size - fine grained matrix + frags Greyish white qtz fragments and black chert frags and graphitic argillite in black silicified matrix Major fault gouge at: 53.35 - 54.1 54.4 - 54.8 55.7 - 59.1			None	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
59.50 TO 89.55	MUDDY TUFF <MUT>	Colour - grey Grain Size - fine grained 59.5 - 62.9 Interbedded graphitic argillite and pyritic muffy tuff. Argillite beds at: 60.66 - 61.1 61.5 - 61.6 62.2 - 62.5 Fault gouge at: 60.15 - 60.35 62.9 - 89.55 Debris flow - argillite, chert and wacke frags. in a pyritic muddy tuff matrix {60.15-60.35} <FLT> Fault gouge at: 68.1 - 68.3 Bedding 68.5m = 75.6m = 87.0m = {68.1-68.3} <FLT>	 55 60 60	 Tr qtz veins	<20-25% py> 20-25% finely bedded pyrite in muddy tuff; 10-15% py occurring as blebs in argillite beds 62.8 - 62.9 Massive pyrite v. fine grained	
89.55 TO 96.30	ARGILLITE AND CHERT <ARG+CHT>	Colour - black Grain Size - fine grained Grey chert fragments and beds in fine grained black argillite - locally graphitic Bedding 91.0m = END OF HOLE	 60		 8-10% py primarily in argillite	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD5522	31.90	33.40	1.50	.006	.02	.01	2.0	0.23									
BCD4394	33.40	34.90	1.50	.006	.01	.09	26.0	38.0									
BCD5523	33.40	34.90	1.50	.005	.01	.01	1.2	0.22									
BCD4395	34.90	36.35	1.45	.029	.04	.01	25.8	0.15									
BCD4396	36.35	37.80	1.45	.213	.70	.02	256.0	2.62	.14	.02						0.90	
BCD4397	37.80	39.30	1.50	.014	.13	.01	13.8	0.10	.02	.01						1.12	
BCD4398	39.30	40.60	1.30	.117	.14	.03	106.4	0.64	.08	.01						1.22	
BCD4399	40.60	42.00	1.40	.426	.39	.48	460.0	0.60	.26	.01						1.07	
BCD4400	42.00	43.50	1.50	.373	.70	1.30	307.5	0.85	0.15	.01						0.43	
BCD4401	43.50	44.70	1.20	.378	.38	.17	422.0	0.39	.20	.01						1.01	
BCD4402	44.70	45.90	1.20	.050	.02	.21	7.7	0.24	.02	.02						1.02	
BCD4403	45.90	47.00	1.10	.338	.52	.18	79.0	0.82	.05	.01						0.40	
BCD4404	47.00	48.45	1.45	2.43	1.62	.84	210.0	2.15	.08	.01						0.84	
BCD4405	48.45	49.75	1.30	.046	1.53	.10	13.7	0.02	.02	.01						1.14	
BCD4406	49.75	51.30	1.55	.036	.02	.03	2.1	0.20									
BCD4407	51.30	52.50	1.20	.009	.06	.06	1.9	0.16									

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	%	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
	0.00	0.00	0.00																

INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 586.41N
EAST: 9845.20W
ELEV: 1535.70

ALTERNATE COORDS GRID: FIELD
NORTH: 98+17N
EAST: 5+80W
ELEV: 1541.00

COLLAR DIP: -80° 0' 0"
LENGTH OF THE HOLE: 113.70m
START DEPTH: 0.00m
FINAL DEPTH: 113.70m

COLLAR GRID AZIMUTH: 185° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 230° 0' 0"

DATE STARTED: October 7, 1986
DATE COMPLETED: October 8, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: R&G DRILLING
CASING: 6.7m LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
95.70	-	-78° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 6.70	OVERBURDEN CASING «OB»					
6.70 TO 28.80	ALTERED MAFIC PYRO-CLASTIC FLOW «MPYRO»	Colour - Yellow-grey Grain Size - fine grained Well foliated. Bedding 24.0m = |17.7-18.5| «FLT» Fault gouge at 17.7 - 18.5	55	Pervasive intense sericite and silica alteration obliterates all original textures 28.4 - 28.8 White qtz vein.	3-5% diss py 22.8 - 22.9 Tr cp and tetrahedrite in qtz vein	6.7 - 14.5 Very blocky core.
28.80 TO 32.60	FAULT GOUGE «FLT»	Colour - grey Grain Size - Qtz vein and sericitic mud - gouge and blocky core throughout.				
32.60 TO 50.10	SEDIMENTS & QUARTZ VEINS «SILT+QV»	Colour - greyish yellow with white quartz veins Grain Size - v. fine grained Core very blocky. Sediment v. fine grained - siltstones - well foliated. 42.6 - 50.1 Fine grained grey, wacke (?), massive and featureless fault gouge at 44.1 - 44.6 |44.1-44.6| «FLT»		34.0 - 34.8 Quartz vein. 35.9 - 42.3 80% qtz veins and green fuchsite in host rock inclusions. 42.3 - 44.6 10-15% qtz veins with tr green fuchsite 47.5 - 48.1 Silicified with tr green fuchsite	34.5 - 34.8 Well mineralized qtz vein - 15% sulphides, 7-8% sph, 7-8% tetrahedrite - sulphides occur as blebs 35.9 - 42.3 2-3% py, associated with green fuchsite in host rock inclusions 42.3 - 47.5 1-2% py |47.5-48.1| «35% py, tr cp,apy,tet,gn» 35% py, 1% arsenopyrite, tr-1% cp, tet, galena	Similar to surface showing trench 83 35.9 - 42.6 Blocky core
50.10 TO 51.70	SILICIFIED ZONE WITH ARGILLITE INCLUSIONS «SIL+ARG»	Colour - black Grain Size - fine grained Brecciated look		Pervasively silicified	5-7% py associated with argillite; tr tet, sph locally	Possible fault breccia?
51.70 TO 52.20	FAULT GOUGE «FLT»	Colour - dark grey Contains qtz and muddy tuff fragments				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
52.20 TO 88.00	MUDDY TUFF «MUT»	Colour - grey Grain Size - fine grained Debris flow consisting of argillite, vacke and pyritic muddy tuff fragments in a v.f.g. pyritic muddy tuff matrix Bedding 57.0m = - fragments generally elongate in plane of foliation and up to 1 cm long Bedding 66.0m = 73.0m = 85.0m = Contact sharp at 70 to C.A.	40 60 60 60	Tr qtz-carb veins	{52.2 - 75.5} «30-35% py» 30-35% v.f.g., bedded pyrite throughout. Sph bleb at 74.4 75.5 - 87.7 5-10% v.f.g. pyrite 87.7 - 88.0 40% pyrite	
88.00 TO 101.70	SILICIFIED CHERT «SIL CHT»	Colour - grey Grain Size - fine grained Locally see weakly bedded chert fragments in pervasively silicified matrix - hard to tell if this is a chert or qtz vein Contact gradational.		Intensely silicified	{99.3 - 100.35} «5-7% py, tr cp» 5-7% py, tr cp.	
101.70 TO 113.70	ARGILLITE WITH CHERT BEDS AND FRAGMENTS «ARG+CHT»	Colour - black Grain Size - fine grained Interbedded argillite and chert Bedding 103.0m = locally grey chert fragments in Bedding 108.0m = argillite matrix Bedding 113.0m = - well bedded. END OF HOLE	55 70 60	Tr qtz veins	Tr diss py	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEM CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD5513	33.00	34.50	1.50								56	116	77		5.4	110	
BCD5514	34.50	34.80	0.30	.642	5.01	.02	760.0	1.15									
BCD5515	34.80	36.30	1.50								38	38	68		3.0	85	
BCD5516	36.30	38.10	1.80								72	180	59		2.4	45	
BCD5517	38.10	39.90	1.80								34	186	88		1.4	30	
BCD5518	39.90	41.40	1.50								62	260	90		2.8	25	
BCD5519	41.40	43.00	1.60								24	46	12		0.7	5	
BCD5520	43.00	44.60	1.60								42	120	20		1.2	40	
BCD5521	47.50	48.10	0.60	.140	1.22	0.56	16.0	0.20	.01	.01							

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 223.30	MAFIC PYROCLASTIC «MPYRD»					
223.30 TO 252.70	MUDDY TUFF «MUT»	Colour - Grain Size - 223.3 - 224.9 Interbedded with grey cht. {224.9 - 225.8} «FLT» Fault gouge 225.8 - 141.05 Chert fragments in siliceous muddy tuff matrix and interbeds of black argillite. Muddy tuff has siliceous look. Bedding 228.0m = 239.2m = 241.05 - 252.7 Siliceous muddy tuff with the odd chert frag. Poorly bedded. Bedding 252.2m = {248.9-249.1} «FLT» Fault gouge at: 248.9 - 249.1 249.3 Pyrite occurs as round concentrically banded nodules.	 60 75 65	Mild sericite and patchy silicified areas. 141.05 - 252.7 Pervasively siliceous with 5-7% late qtz veins.	223.3 - 241.05 10-15% py; tr-1% sph, tr. tet in siliceous areas & late qtz veins. 141.05 - 252.7 5-7% py occurring as v.fgr. beds in host rock and m-cgr. subhedral to anhedral masses in late q..s. 1-2% sph; tr-1% tetrahedrite restricted to late qtz veins.	IDP concur - cherty ruddy tuff
252.70 TO 263.75	MASSIVE SULPHIDES «MS»	Colour - brassy yellow with grey inclusions Bedding 253.6m = Grain Size - f-cgr. 252.8 - 254.0 Sulphides weakly bedded. 254.1 - 255.9 Interbedded v.fgr. pyrite beds and mgr. pyrite and framboidal pyrite beds. Bedding 254.3m =	 75 75		252.7 - 254.0 Massive sulphide with siliceous matrix - primarily py with 8-10% sph; 3-5% tetrahedrite; 1% cp. Locally py occurs as framboids up to 1 cm diam. 254.0 - 254.1 Bed of siliceous pyritic (15-20%) muddy tuff with 0.5 cm wide qtz stringer with tr. sph, py & tet. 254.1 - 255.9 Massive sulphides with locally siliceous zones. Primarily py - occurs as fine beds, mgr. crystals and framboids (up to 2 cm diameter)	Siliceous patches invariably have sph, tetrahedrite +/- cp, galena.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
					throughout zone; 5% sph; 1-2% tetrahedrite; tr galena; tr-1% cp (sph, tet, gal & cp occur with agr and frambroidal py).	
					255.9 - 256.24 Pyritic (15-20%) muddy tuff.	
		256.25 - 258.1 Pyrite frambroidal up to 1 cm diameter in siliceous areas; pyrite and sph weakly bonded. Bedding 257.5m =	70		256.25 - 258.1 Massive sulphides with siliceous zones primarily py with 10% light brown sph; 3-5% tetrahedrite; tr cp; tr-1% galena.	
		258.1 - 260.1 Finely bedded pyrite/tetrahedrite; with frambroids of py near base.			258.1 - 260.1 Massive sulphides; primarily py with 1-2% tetrahedrite; 10% light brown sph; 3-5% cp; 10% galena.	
		260.1 - 260.35 Fragments of pyritic muddy tuff in siliceous matrix - well bedded. Bedding 260.2m =	55		260.1 - 260.35 Siliceous pyritic muddy tuff.	Overall estimate of economic sulphides from 252.7 - 263.75 (11.05m) is 7-8% sph; 2-3% tetrahedrite; 1-1.5% cp; 1-2% galena.
		260.35 - 263.75 Well bedded; locally have frambroids of py up to 1 cm diameter. Bedding 261.0m = Bedding 262.0m =	65 60		260.35 - 263.75 Semi-masive to massive sulphides in siliceous matrix (80% sulphides) - primarily py with 7-8% light brown sph; 2-3% tetrahedrite; 1-2% cp.	
263.75 TO 291.40	PYRITIC MUDDY TUFF <py MUT>	Colour - dark grey Grain Size - fgr. Well bedded with 1-2% grey chert fragments - between pyritic material have grey siliceous beds. Bedding 266.0m	55	1% qtz veins - weakly sericitic.	<20-25% py, tr sph,tet,cp gn> 20-25% v.fgr. bedded py, tr. sph, tet, cp, galena in late qtz veins	
		Fault gouge at 268.2 - 268.55m Bedding 273.6m = Bedding 280.0m =	50 50			
		Fault gouge and blocky core at: 268.2 - 268.55m Bedding 287.3m =	70			
		286.5 - 288.7 Interbedded chert and muddy tuff. {268.2-268.55} <FLT>		288.7 - 291.4 Qtz vein with muddy tuff inclusions.	287.1 2 cm wide zone with sph & tet. 288.7 - 289.0 15-20% py; tr cp in q.v.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
291.40 TO 294.70	CHERT AND SERICITIC TUFF «CHT+SERT»	Colour - Yellowish grey Grain Size - fine grained Interbedded chert and tuff. Bedding 292.0 = END OF HOLE	65	Tuffaceous material pervasively sericitic.		

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOL CU PPM	AL ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD4419	241.05	242.60	1.55	.346	.9	.47	76	.18									
BCD4420	242.60	244.10	1.50	.43	.61	.44	59.5	.15									
BCD4421	244.10	245.60	1.50	.089	.8	.27	18	.06									
BCD4422	245.60	247.10	1.50	.131	.72	.3	50.2	.22									
BCD4423	247.10	248.60	1.50	.06	.19	.02	22.5	.08									
BCD4424	248.60	250.10	1.50	.202	.6	.24	44.6	.41									
BCD4425	250.10	251.60	1.50	.03	.21	.09	4.1	.04									
BCD4426	251.60	252.70	1.10	.06	.82	.49	14.6	.2									
BCD4410	252.70	254.10	1.40	.464	4.27	3.01	72.2	.41	.14	.2							
BCD4411	254.10	255.70	1.60	.083	3.37	1.79	16.3	.26	.02	.01							
BCD4412	255.70	256.90	1.20	.061	1.4	.6	16.2	.27	.02	.02							
BCD4413	256.90	258.10	1.20	.405	5	3.46	57.9	.39	.13	.01							
BCD4414	258.10	259.10	1.00	.754	3.4	7.52	97.6	.39	.21	.40							
BCD4415	259.10	260.10	1.00	.712	1.06	4.68	106.4	.59	.25	.25							
BCD4416	260.10	261.30	1.20	.109	3.28	2.13	21.8	.38	.03	.01							
BCD4417	261.30	262.50	1.20	.087	2.6	1.05	16	.24	.03	.01							
BCD4418	262.50	263.75	1.25	.042	1.1	.59	12.1	.2	.02	.01							
BCD4420	265.00	266.25	1.25														
BCD4421	266.25	267.50	1.25														
BCD4422	267.50	268.75	1.25														

S.	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	%	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4451	41.80	44.80	3.00	45.22	14.88	8.76	11.64	2.05	0.04	12.92	0.34	1.60	.005	.005	112	102	.005	97.46	
BCD4452	75.30	78.30	3.00	45.11	15.19	8.23	11.83	2.25	0.02	12.77	0.31	1.69	.005	.005	86	77	.005	97.39	
BCD4453	111.90	114.90	3.00	46.73	15.69	5.39	12.62	1.64	0.30	12.66	0.34	1.92	.031	.007	75	116	.005	97.32	
BCD4454	136.20	139.30	3.10	46.22	15.32	7.25	11.89	1.97	0.01	12.83	0.29	1.66	.010	.005	102	155	.005	97.46	
BCD4455	169.80	172.80	3.00	43.51	16.58	5.33	13.56	1.93	0.01	14.33	0.26	1.72	.007	.005	96	86	.005	97.24	
BCD4456	194.20	197.20	3.00	41.73	16.13	6.85	12.83	0.07	1.86	12.83	0.55	1.95	.094	.010	360	8300	.108	95.01	

INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 831.23N
EAST: 9733.36W
ELEV: 1616.00

ALTERNATE COORDS GRID: FIELD
NORTH: 8+20W
EAST: 97+ 0W
ELEV: 1623.00

COLLAR DIP: -80° 0' 0"
LENGTH OF THE HOLE: 358.70m
START DEPTH: 0.00m
FINAL DEPTH: 358.70m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: October 12, 1986
DATE COMPLETED: October 16, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
47.90	-	-76° 0'	ACID	OK		-	-	-	-	-	
114.90	-	-75° 0'	ACID	OK		-	-	-	-	-	
178.00	-	-71° 0'	ACID	OK		-	-	-	-	-	
217.60	-	-70° 0'	ACID	OK		-	-	-	-	-	
261.20	-	-68° 0'	ACID	OK		-	-	-	-	-	
279.20	-	-66° 5'	ACID		suspect	-	-	-	-	-	
334.40	-	-68° 0'	ACID	OK		-	-	-	-	-	
334.40	213° 0'	-67° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.00	OVERBURDEN CASING «OB»					
3.00 TO 213.80	MAFIC PYRO-CLASTIC FLOW «MPYRO»	Colour - Greeny-with yellow-green to grey frags. Grain Size - fine grained Lapilli and block-sized mafic fragments in ashy matrix Bedding 16.0 = - frags. stretched slightly in plane of foliation Bedding 32.7 Bedding 49.6m = Bedding 61.5m = Bedding 74.0 = Bedding 92.3m = Fault gouge & breccia at: {115.0 - 115.4} «FLT» Bedding 136.0m = Bedding 142.0m = Bedding 175.0m = Bedding 198.0m = 200.3 - 208.3 Fragments indistinct in altered hole. Bedding 204.0m = Bedding 208.6m = Fault gouge at: {210.4 - 210.7} «FLT»	70 60 65 60 60 60 60 65 60 60 65 60 60	3.0 - 18.3 Fragments a buff yellow colour due to sericite alteration 2-3% qtz veins. 18.3 - 132.4 Relatively unaltered; 1-2% qtz-carb veins Larger white qtz veins at: 115.4 - 115.7 116.4 - 116.8 127.1 - 127.9 130.3 - 132.4 - has inclusions of host rock Host rock adjacent to qtz veins only very weakly sericitic 132.4 - 176.6 Weak sericite - core a yellowish green colour 176.6 - 200.3 Pervasive moderate silicification and weak sericite 200.3 - 208.3 Becoming intensely sericitic & silicified - core bleached light yellow with apple green colour (due to epidote?) 208.3 - 213.8 Weakly sericitic weak to moderate silicification	Tr-1% diss py 27.2 - tr. galena in qtz vein 38.6 - 1% cp, 1% galena in 2cm vide qtz vein {112 - 112.3} «qv with cp,gn,sph,py» Qtz veins with cp, galena, sph, py 116.4 - 116.8 1% cp, tr galena in vein 127.1 - 127.9 3-5% py, tr-1% cp, tr galena, sph 130.3 - 132.4 1-2% py, tr sph, galena 148.0 - 148.1 1-2% galena in qtz vein tr diss py	Blocky core at: 148.4 - 150.1 162.2 - 168.9 184.6 - 199.5 Blocky core

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
213.80 TO 267.45	CHERT, SERICITIC TUFF AND ARGILLITE «CHT+SERT» «+ARG»	Colour - Yellowish grey to black Grain Size - fine grained Interbedded chert, tuff and argillite Bedding 215.5m = - locally have grey chert fragments in argillic matrix Bedding 218.5m = fault gouge throughout: 213.8 - 214.9 Bedding 229.0m = blocky core and fault at: Bedding 235.0m = 241.7 - 242.0 249.0m = 253.6m = 257.0m = Contact gradational	55 60 70 65 50 65 65	Tuffaceous material pervasively sericitic. 2-3% qtz veins throughout	«3-5% py» 3-5% diss py - primarily associated with chert and sericitic tuff	
267.45 TO 327.80	MUDDY TUFF, CHERT AND SERICITIC TUFF «MUT+CHT» «+SERT»	Colour - Grey Grain Size - fine grained Chert beds and fragments in a pyritic muddy tuff matrix; Bedding 272.0m = wispy beds of sericitic tuff throughout from 267.45 - 283.5 284.8 - 293.65 Bedding 281.0m = Interbeds of very fine grained argillite, chert, muddy tuff Bedding 287.0m = - argillite is locally graphitic Fault gouge at: {293.65 - 293.8} «FLT» 293.8 - 303.9 Interbeds of argillite and grey pyritic muddy tuff only - also have fragments of each rock type in the other. Fault gouge at: {303.65 - 303.7} «FLT» 303.9 - 327.8 Bedding 305.0m = Pyritic muddy tuff, finely bedded Bedding 310.5m 308.0 - 309.0 Round (up to 1cm diameter) siliceous "nodules" in pyritic muddy tuff matrix. Fault gouge at: {312.5 - 312.65} «FLT» {313.6 - 313.9} «FLT»	65 70 60 60 70	Tuffaceous zones are sericitic (light yellow in colour) - 3-5% qtz veins and siliceous zones 303.9 - 327.9 Pervasively silicified muddy tuff and pervasive sericite.	267.45 - 283.5 Muddy tuff sections consist of very fine grained bedded pyrite. Overall approx. 10-15% py; tr sph, tet, cp and galena in siliceous patches. 283.5 - approx. 197.0 20-25% py occurring as very fine grained beds and m.g. anhedral to subhedral grains in siliceous areas. 1% sph, 0.5-1.0% galena, tr cp, tetrahedrite - primarily in siliceous areas which generally cross-cut the bedding. {297.0-309.9} «34-50% py, tr sp,gn,tet» 35-40% very fine grained py in muddy tuff and m.g. py in veinlets; tr sph, galena, tetrahedrite throughout zone. 309.9 - 317.35 30-35% very fine grained py, 1% sph, tr-1% g alena, tr tetrahedrite in siliceous areas. 317.35 - 327.8 15-20% very fine grained pyrite, tr sph, tet in siliceous areas.	283.5 - 279.0 Fringe-type mineralization to RG-85 Massive Sulphide Zone.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		{317.35 - 317.7} «FLT» {317.85 - 318.0} «FLT» Thin (2-3cm) fault gouge zones throughout the interval: 318.0 - 324.4 Quartz vein at contact.		326.8 - 327.8 Qtz vein with muddy tuff inclusions .		
327.80 TO 347.20	ALTERED MAFIC ASH? «SERT»	Colour - Greyish brown Grain Size - fine grained Massive to very poorly foliated wacke. 334.8 - 337.6 Grey to black chert with sericitic wisps. Contacts with this unit ill-defined. Contact sharp.		3-5% wisps of brownish sericite?; 3-5% qtz veins 327.8 - 328.6 Emerald green fuchsite at contact zone 337.6 - 338.3 Tr pale green talc (very soft).	2-3% diss py throughout with local enrichments as noted below. 337.6 - 338.3 15-20% py, tr-1% arsenopyrite. 339.6 - 339.9 40% py, 2% sph, 2% galena, 1% cp.	
347.20 TO 357.65	CHERT, BLACK ARGILLITE «CHT+ARG»	Colour - Dary grey to black Grain Size - fine grained Grey interbeds of chert and chert fragments in black argillite, also have grey wacke fragments. Bedding 349.0m = 50 Bedding is quite variable from shallow to steep core angles. Bedding 355.6m = 80 Contact sharp.		Relatively unaltered	Tr-1% diss py.	
357.65 TO 358.70	ALTERED MAFIC ASH? «SERT»	Colour - Grey Grain Size - fine grained Same as at 327.8 - 347.2 END OF HOLE			Tr-1% py.	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD4427	276.95	278.45	1.50	.001	.031	.02	.5	.01									
BCD4428	281.90	283.50	1.60	.001	.08	.01	.3	.01									
BCD4429	283.50	285.50	2.00	.015	.88	.58	4.8	.01									
BCD4430	285.50	286.50	1.00	.023	.65	.37	12.4	.02									
BCD4431	286.50	288.00	1.50	.003	.19	.64	3.9	.03									
BCD4432	288.00	289.60	1.60	.012	.51	.13	2	.01									
BCD4433	289.60	291.00	1.40	.006	.6	.14	1.8	.01									
BCD4434	291.00	292.50	1.50	.041	.69	.33	7.9	.03									
BCD4435	292.50	294.00	1.50	.002	.68	.65	6.0	.01									
BCD4436	294.00	295.50	1.50	.104	.42	.46	4.1	.08									
BCD4437	295.50	297.00	1.50	.039	.27	.49	4.9	.03									
BCD4438	309.90	311.40	1.50	.002	.14	.07	8.3	.01									
BCD4439	311.40	312.90	1.50	.040	.13	.09	3.9	.04									
BCD4440	312.90	314.40	1.50	.005	.06	.01	15.4	.07									
BCD4441	314.40	315.90	1.50	.003	.12	.02	10.2	.02									
BCD4442	315.90	317.35	1.45	.014	1.70	.31	3.5	.01									
BCD4443	326.80	327.80	1.00								26	52	84		1.1	35	
BCD4444	327.80	328.60	0.80								39	120	36		0.9	10	
BCD4445	328.60	330.10	1.50								45	156	39		1.1	10	
BCD4446	337.60	338.30	0.70	.029	1.06	.43	10.0	0.02									
BCD4447	338.30	339.60	1.30								195	380	860		1.3	5	
BCD4448	339.60	339.90	0.30	.672	.520	2.56	17.8	0.04									
BCD4449	339.90	341.40	1.50								830	2900	2350		2.1	25	

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	Ti... %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4457	150.60	153.60	3.00	48.65	14.28	7.09	10.81	2.31	0.11	11.29	0.35	2.19	.005	.011	51	180	.005	97.10	
BCD4458	178.00	181.10	3.10	47.09	16.16	4.28	12.91	2.72	0.16	12.25	0.32	1.56	.005	.005	110	101	.005	97.16	
BCD4469	331.30	334.40	3.10	43.72	16.18	9.39	10.32	0.29	1.86	12.68	0.50	2.10	.066	.011	65	184	.005	97.22	20

INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REAI
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 906.66N
EAST: 9847.44W
ELEV: 1586.46

ALTERNATE COORDS GRID: FIELD
NORTH: 9+ 6N
EAST: 98+ 0W
ELEV: 1595.00

COLLAR DIP: -75° 0' 0"
LENGTH OF THE HOLE: 360.60m
START DEPTH: 0.00m
FINAL DEPTH: 360.60m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: October 17, 1986
DATE COMPLETED: October 21, 1986
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: NO

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

CONTRACTOR: G&D DRILLING
CASING: 3.0m LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
57.00	-	-73° 0'	ACID	OK		-	-	-	-	-	
99.70	-	-73° 0'	ACID	OK		-	-	-	-	-	
178.90	-	-70° 0'	ACID	OK		-	-	-	-	-	
224.60	-	-66° 0'	ACID	OK		-	-	-	-	-	
270.40	-	-63° 0'	ACID	OK		-	-	-	-	-	
291.70	-	-62° 0'	ACID	OK		-	-	-	-	-	
349.60	208° 0'	-61° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.00	OVERBURDEN «OB»					
3.00 TO 214.90	MAFIC PYRO-CLASTIC FLOW «MPYRO»	Colour - green Grain Size - fine grained Bedding 11.0m = Lapilli and lock size fragments in fine gr. ash matrix	70	3.0 - 21.6 Weakly sericitic and silicified (5% qtz veins) Large white qtz veins at: 5.1 - 5.5 9.45 - 9.8	3.0 - 21.6 1-2% diss. py	CASING
		{25.8-25.85} «FLT» Fault gouge at: 25.8 - 25.85 Bedding 35.0m = {29.95 - 30.2} «FLT» {30.5 - 31.0} «FLT» {51.5 - 51.7} «FLT»	65	21.6 - 25.75 Intensely sericitic and silicified 25.75 - 31.5 Weakly to moderately sericitic and silicified 31.5 - 38.8 Moderate to intense sericite with larger qtz veins at: 32.2 - 33.85: tr green mica? 36.0 - 36.7 37.9 - 38.5	21.6 - 25.75 5% diss. py 25.75 - 31.5 2-3% diss. py 26.4: tr sph, tet. in qtz vein 31.5 - 38.8 Tr galena in qtz vein 37.9-38.5: 1% galena, tr cp in q.v.	
				38.8 - 51.7 Yellow, weakly sericitic mafic frags. in dark green chloritic ash Qtz veins at: 39.1 - 39.2 40.7 - 42.0 45.7 - 46.8	38.8 - 51.7 1% py except where noted below 39.1-39.2: tr galena, cp 40.7-42.0: tr-1% galena, 1-2% py 45.7-46.8: 2-3% py, 3% galena; tr cp, sph	
		Bedding 59.7m = Bedding 76.5m = Bedding 109.5m = Bedding 125.0m = Bedding 145.5m =	65 70 70 60 55	51.7 - 145.7 Relatively unaltered; 1-2% qtz-carb veins. 63.85-69.4: 10-15% qtz-carb veins	51.7 - 145.7 Tr diss. py	
		Fault gouge and blocky core at: 149.6 - 150.9 Bedding 162.0m = Bedding 166.4m =	60 70	145.7 - 182.0 Fragments a light yellow in colour due to weak sericite matrix chloritic and weakly silicified		
		{149.6-150.9} «FLT» 182.0 - 197.0 More ashy veining irregular and also parallel to foliation. Bedding 196.0m =	55	182.0 - 197.0 Pervasive qtz-carb veining (15-20%) and weak sericite-chlorite alteration	145.7 - 197.0 1% diss py	
		197.0 - 214.9 Light grey mafic fragments in brownish grey matrix 205.45-209.3: blocky core with minor fault gouge		197.0 - 214.9 Pervasive moderate silicification and carb. Fragments altered (ser) to light brown colour.	197.0 - 214.9 Tr diss py	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Fault gouge at contact.				
214.90 TO 301.70	CHERT, SERICITIC TUFF, ARGILLITE «CHT+SERT» «+ARG»	Colour - Grey to yellowish grey with black argillite Grain Size - fine grained Bedding 217.0m = Interbedded cht, tuff and argillite. {214.9-215.2} «FLT» Fault gouge from 214.9 - 215.2 Bedding 223.0m = Zones with large argillite component and minor chert and sericitic tuff at: Bedding 235.0m = 227.9 - 237.9 Bedding 240.0m = 247.9 - 251.4 260.1 - 296.9 Bedding 247.0m = Fault gouge at: {259.85 - 260.1} «FLT» Bedding 259.5m {289.9 - 290.1} «FLT» Bedding 264.0m {292.3 - 292.4} «FLT» Bedding 287.0m {295.8 - 295.9} «FLT» Colour indistinct	60 65 55 55 70 60 60 70	Tuffaceous component is pervasively sericitic 1-2% qtz veins 268.1 - 298.4 25-30% white qtz veins 284.4 - 285.5 1-2% white barite? associated with qtz vein	214.9 - 223.8 3-5% diss py - primarily associated with sericitic tuff 223.8 - 301.7 Tr 1% diss py 247.0: 0.5 cm stringer with cp 258.6: 2 cm stringer with py, galna, sph, tetrahedrite	
301.70 TO 351.10	MUDDY TUFF «MUT»	Colour - grey Grain Size - fine grained matrix and frags. 301.7 - 333.0 Bedding 302.5m = Debris flow texture; chert, argillite and wacke? fragments in pyritic muddy, tuff matrix. No apparent grading on sorting of fragments. Have the odd thin (0.1mm) bed of argillite Fault gouge at: {321.7 - 322.2} «FLT» {322.7 - 322.85} «FLT» Bedding 310.0 = {324.3 - 324.4} «FLT»	70 65	301.7 - 304.2 2-3% qtz veins and siliceous patches. Weakly sericitic 304.7 - 306.3 Siliceous matrix to sulphides 306.3 - 311.7 2-3% siliceous patches	«20-35% py» 301.7 - 304.7 20-25% py as v. fgr beds and m.gr cubes in siliceous zones. Tr sph, tet, galena in siliceous patches. {304.7 - 305.5} «SMS» Semi-massive sulphides in siliceous matrix 85-89% sulphides - primarily py with 2-3% sph; r-0.5% galena; tr-1% tetrahedrite 305.3 - 306.3 30% py, 1-2% sph; tr-1% tet in siliceous)cherty looking) host. 306.3 - 311.7 30-35% v. fgr bedded, pyrite which is typical of the muddy tuff. Tr sph, tet and galena in siliceous patches	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Bedding 314.0m =	70	311.7 - 329.35 Relatively unaltered. 1% qtz veins 329.35 - 333.0 10-15% siliceous patches	311.7 - 329.35 10-15% v.fgr pyrite in muddy tuff; have the odd speck of sph and tet in siliceous patches 329.35 - 333.0 30-35% v.fgr py; 1-2% sph, tr tet. in siliceous patches	Mislatch at 324.5 - 327.7m - missing approx. 1.5m or core
		333.0 - 351.1 Finely bedded muddy tuff with only the odd chert fragment. Bedding 343.0m =	45	333.0 - 346.9 Mildly sericitic with 2-3% siliceous patches	333.0 - 351.1 30-35% v.fgr bedded pyrite	
		Fault gouge at: 346.7 - 347.8 <FLT> 348.2 - 348.35 <FLT> 350.15 - 350.4 <FLT> Bedding 346.6m =	40	346.9 - 351.1 10% white qtz veins	338.1 3 cm wide siliceous zone with sph and galena tr-1% diss. py	
		Contact sharp.				
351.10 TO 359.25	ALTERED MAFIC PYRO-CLASTIC FLOW <MPYRO>	Colour - light grey with green fragments Grain Size - fine grained Bedding 352.6 Well foliated with 1-2% remnant green mafic fragments Bedding 358.0m =	50 55	<ser + sil> Pervasively inenesely silicified and sericitic		
		Qtz vein at contact				
359.25 TO 360.60	CHERT <CHT>	Colour - grey Grain Size - very fine grained Bedding 360.0m Weakly bedded END OF HOLE	65			

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD5526	32.20	33.80	1.60						25	1280	196		1.6	25			
BCD5527	35.90	36.70	0.80						40	69	840		2.6	110			
BCD5528	37.90	39.20	1.30						525	350	750	9.8	30				
BCD5529	45.70	46.80	1.10	.069	2.84	.90	247.0	0.67									
BCD5501	301.70	303.20	1.50	.014	.33	.13	3.8	.18									
BCD5502	303.20	304.70	1.50	.012	.41	.20	4.0	.10									
BCD5503	304.70	305.50	0.80	.32	4.78	3.14	28.2	.50									
BCD5504	305.50	306.30	0.80	.066	1.56	.63	10.0	.25									
BCD5505	306.30	307.80	1.50	.006	.20	.06	2.1	.03									
BCD5506	307.80	309.30	1.50	.005	.09	.05	1.8	.02									
BCD5507	309.30	310.50	1.20	.004	.01	.04	2.0	.01									
BCD5508	310.50	311.70	1.20	.002	.07	.04	2.0	.01									
BCD5509	329.35	330.50	1.15	.005	.50	.19	6.6	.02									
BCD5510	330.50	331.70	1.20	.024	.62	.38	12.0	.03									
BCD5511	331.70	333.00	1.30	.047	.54	.36	12.2	.02									
BCD5512	337.60	339.10	1.50	.018	.62	.26	9.6	.23									

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	[illegible] %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4459	57.00	60.00	3.00	45.87	15.04	7.21	11.16	3.24	0.08	12.66	0.30	1.65	.117	.005	105	75	.005	97.32	
BCD4460	90.50	93.50	3.00	45.62	14.66	8.78	12.24	1.72	0.02	12.51	0.31	1.65	.022	.005	98	86	.005	97.54	
BCD4461	124.10	127.10	3.00	44.84	14.64	9.96	10.75	2.44	0.02	11.91	0.27	2.28	.034	.011	74	80	.005	97.15	
BCD4462	157.10	160.30	3.20	47.77	14.94	6.81	11.88	1.89	0.01	12.19	0.36	1.53	.005	.005	75	115	.005	97.39	
BCD4463	200.30	203.30	3.00	44.81	14.99	7.71	13.97	0.04	0.61	12.62	0.57	1.90	.014	.007	58	314	.021	97.26	
BCD4464	352.70	355.70	3.00	41.46	14.51	16.03	8.88	0.27	3.70	9.49	0.63	2.07	.134	.012	66	52	.005	97.18	

INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REAI
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 865.10W
EAST: 9928.20W
ELEV: 1554.70

ALTERNATE COORDS GRID: FIELD
NORTH: 98+93N
EAST: 8+67W
ELEV: 1568.00

COLLAR DIP: -60° 0' 0"
LENGTH OF THE HOLE: 276.50m
START DEPTH: 0.00m
FINAL DEPTH: 276.50m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: October 21, 1986
DATE COMPLETED: October 26, 1986
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&B DRILLING
CASING: 3.4m LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
49.70	-	-58° 5'	ACID	OK		-	-	-	-	-	
121.00	-	-58° 5'	ACID	OK		-	-	-	-	-	
151.50	-	-58° 0'	ACID	OK		-	-	-	-	-	
191.10	-	-56° 0'	ACID	OK		-	-	-	-	-	
271.00	-	-56° 0'	ACID	OK		-	-	-	-	-	
273.40	212° 0'	-53° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.40	OVERBURDEN					
0.00 TO 0.00						
TO 3.40	«OB»					
3.40 TO 126.60	MAFIC PYRO-CLASTIC FLOW «MPYRO»	Colour - Greyish green Grain Size - fine grained. Lapilli and block-sized fragments in fine grained ashy matrix. Fragments stretched slightly in plane of foliation. Bedding 11.4m = {25.5-25.53} «FLT» Fault gouge at: 25.5 - (3 cm) Bedding 28.0m = Blocky core and minor fault. Bedding 49.5m = Gouge at: Bedding 65.0m = 38.9 - 50.2 Bedding 73.5m = {38.9-50.2} «FLT» Bedding 96.0m = Bedding 125.0m = Contact sharp.	80 80 80 75 75 70 80	3.4 - 84.5 Relatively unaltered; 1-2% qtz veins ashy matrix is chloritic. Fragments are light grey to greenish grey in colour. 37.35 - 38.1 Silicified and carbonate-rich zone. 84.5 - 98.8 Fragments altered to a buff yellow colour (weak sericite) 1-2% qtz-carb veins. 98.8 - 121.0 Fragments yellow due to pervasive sericitic matrix brownish grey due to pervasive moderate sericite, silica and chlorite alteration. 2-3% qtz-carb veins 121.0 - 126.6 Intense silica and sericite - chlorite alteration - hard to distinguish fragments.	Tr diss. py except where noted below. 2-3% py in veins and tr cp. 37.35 - 38.1 5-7% py, 1-2% cp, tr sph, galena, tetrahedrite. 41.2 - 41.7 10-15% py. 125.15 - tr sph in qtz vein	
126.60 TO 224.10	CHERT, ARGILLITE, SERICITIC TUFF «CHT+ARG» «+SERT»	Colour - Black to dark grey Grain Size - fine grained Locally have chert fragments (grey) in black chert and/or argillite matrix. - Argillite and chert inter-bedded with sericitic tuff. - Sericitic tuff and chert zones at: Bedding 134.0m =	80	Tuffaceous material is pervasively sericitic (light yellow in colour) 1-2% qtz veins throughout.	Tr py 2-3% py in sericitic tuff/chert zones	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		136.8 - 148.2 153.85 - 157.5 Bedding 150.0m = 177.1 - 181.3 Bedding 158.0m = 162.1 - 214.9 Chert fragments in a predominantly argillite matrix with minor sericite tuff. Bedding 165.2m = Fault gouge at: Bedding 170.0m = 167.2 (3cm) 169.8 (1cm) 171.4 - 171.7 173.85 - 173.9 Bedding 186.5m = 188.1 (2cm) 190.1 - 190.6 192.5 - 192.6 Bedding 196.5m = 199.1 - 199.5 Bedding 207.0m = 214.9 - 224.1 Sericitic tuff and chert beds and fragments. Fault gouge at: 219.3 - 219.5 Bedding 222.5m =	55 70 70 55 80 70 70 75		Mislatch at 142.3 - missing approx. 1.2m of core	
224.10 TO 240.75	MUDDY TUFF WITH CHERT FRAGMENT & SERICITIC TUFF INCLUSIONS <MUT>	Colour - grey Grain Size - fine grained Chaotic arrangement of Muddy Tuff; chert fragments in muddy tuff and argillite matrix; and sericitic tuff. Bedding 234.0m	80	1-2% siliceous patches 235.5 - 236.55 Have small elliptical siliceous "spots" - intimately associated with sph.	5% diss. py - v. f.g. associated with muddy tuff matrix. Tr-1% sph in siliceous areas more enriched areas at: 235.5 - 236.55 7-8% sph, 1% galena, tr-1% tetrahedrite 10-15% py. Sph occurs as elliptical (2-3 mm x 1-2mm) spots	
240.75 TO 263.10	MUDDY TUFF <MUT>	Colour - Greyish brown Grain Size - very fine grained Very finely bedded pyritic muddy tuff. |241.75-243.0| <FLT> Fault gouge throughout the interval: 241.75 - 243.0 Bedding 248.5m = Bedding 259.7m = Fault gouge at: |262.0 - 262.6| <FLT> Contact sharp.	 55 50	5-10% siliceous areas gives rock a cherty look.	240.75 - 241.3 20-12% sph, 1% tetrahedrite, tr galena, 5% v.f.g. pyrite |241.3-248.8| <30-35% py, tr sp,gn,tet> 30-35% v.g.g. py, tr-1% sph, tr galena, tetrahedrite in siliceous patches 248.8 - 263.1 15-20% v.f.g. py, tr sph in qtz veinlets 253.8 - 254.1 1-2% sph, tet in siliceous patch.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
263.10 TO 275.00	ALTERED MAFIC PYRO-CLASTIC (?) ASH «SERT»	Colour - Grey Grain Size - fine grained Predominantly ashy material weekly foliated Bedding 272.0m = Blocky core at: 266.7 - 270.4 Contact sharp.	60	Pervasive intense sericite, silica and minor chlorite alteration	None	Lithogeochem sample # BCD 4468 (271.0 - 273.4)
275.00 TO 276.50	CHERT, ARGILLITE & MINOR SERICITIC TUFF «CHT+ARG+» «SERT»	Colour - Greyish black Grain Size - fine grained. Well bedded. Bedding 276.0m = END OF HOLE	50		None	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
AVE.30	0.00	38.10	38.10								5170	6150	4450		3.6	25	
BCD5531	234.00	235.50	1.50	.001	.03	.01	1.6			.01						10	
BCD5532	235.50	236.55	1.05	.036	3.29	.82	10.2			.01						20	
BCD5533	236.55	238.00	1.45	.002	.02	.02	0.9			.01						5	
BCD5534	240.75	241.30	0.55	.057	3.06	1.14	12.0			.01						20	
BCD5535	241.30	242.80	1.50	.012	.15	.13	6.3			.01						10	
BCD5536	242.80	244.30	1.50	.020	.74	.79	17.0			.01						20	
BCD5537	244.30	245.80	1.50	.055	.45	.30	18.2			.01						50	
BCD5538	245.80	247.30	1.50	.020	.74	.79	17.0			.01						80	
BCD5539	247.30	248.80	1.50	.003	.28	.33	3.5			.01						10	
BCD5540	253.60	254.60	1.00	.011	.39	.14	6.4			.01						5	
BCD5541	254.60	255.60	1.00														
BCD5542	255.60	256.60	1.00														
BCD5543	256.60	257.60	1.00														
BCD5544	257.60	258.60	1.00														
BCD5545	258.60	259.60	1.00														
BCD5546	259.60	260.60	1.00														
BCD5547	260.60	261.60	1.00														
BCD5548	261.60	262.60	1.00														
BCD5549	262.60	263.60	1.00														
BCD5550	263.60	264.60	1.00														
BCD5551	264.60	265.60	1.00														
BCD5552	265.60	266.60	1.00														
BCD5553	266.60	267.60	1.00														
BCD5554	267.60	268.60	1.00														
BCD5555	268.60	269.60	1.00														
BCD5556	269.60	270.60	1.00														
BCD5557	270.60	271.60	1.00														
BCD5558	271.60	272.60	1.00														
BCD5559	272.60	273.60	1.00														
BCD5560	273.60	274.60	1.00														
BCD5561	274.60	275.60	1.00														
BCD5562	275.60	276.60	1.00														
BCD5563	276.60	277.60	1.00														
BCD5564	277.60	278.60	1.00														
BCD5565	278.60	279.60	1.00														
BCD5566	279.60	280.60	1.00														
BCD5567	280.60	281.60	1.00														
BCD5568	281.60	282.60	1.00														
BCD5569	282.60	283.60	1.00														
BCD5570	283.60	284.60	1.00														
BCD5571	284.60	285.60	1.00														
BCD5572	285.60	286.60	1.00														
BCD5573	286.60	287.60	1.00														
BCD5574	287.60	288.60	1.00														
BCD5575	288.60	289.60	1.00														
BCD5576	289.60	290.60	1.00														
BCD5577	290.60	291.60	1.00														

Sample	From (m)	To (m)	Length (m)	CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	Cu PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t
BCD5578	291.60	292.60	1.00													
BCD5579	292.60	293.60	1.00													
BCD5580	293.60	294.60	1.00													

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	FeO %	MnO %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	TOT %	Au ppb
BCD4465	44.20	46.90	2.70	48.02	14.68	5.54	12.59	1.62	0.03	12.86	0.32	1.58	.019	.005	80	130	.005	97.26	
BCD4466	75.30	78.30	3.00	44.22	15.27	8.17	12.11	1.98	0.02	13.77	0.27	1.54	.005	.005	81	80	.014	97.38	10
BCD4467	108.80	111.90	3.10	42.33	16.47	5.48	14.37	1.31	0.02	15.24	0.28	1.68	.005	.005	95	160	.031	97.41	5
BCD4468	271.00	273.40	2.40	44.26	16.35	9.07	9.76	0.69	2.2	12.31	0.44	2.13	.092	.012	64	98	.020	97.33	5

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS. METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 605.20W
EAST: 9835.50W
ELEV: 1543.70

ALTERNATE COORDS GRID: FIELD
NORTH: 6+ 0N
EAST: 98+20W
ELEV: 1543.70

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 89.90m
START DEPTH: 0.00m
FINAL DEPTH: 89.90m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: April 28, 1987
DATE COMPLETED: April 29, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: NONE
CORE STORAGE: BARRIERE

PURPOSE: TO TEST DOWNDIP MASSIVE SULPHIDES NEAR RG-84

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
86.90	-	-87° 0'	ACID	OK		-	-	-	-	-	
89.00	123° 0'	-82° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.66	CASING «OB					
3.66 TO 15.24	ALTERED MAF IC PYRO-CLASTIC FLOW «MPYRO»	Color -lt. green to yellow Grain size -fine Weakly foliated ---------- Lapilli size flattened parallel to bedding---------- Fragments with vague remnant mafic phenos. (chl. a lt.)	65 55	«ser» - strong qtz-sericite alteration - pervasive alt. with lapilli better preserved - approx. 2% qtz veinlets - weak weathering on fract.	«3-5% py» 3-5% dissem. py with occasional pyrite veinlet Occas. lapilli withup to 10+% dissem. py	
15.24 TO 47.45	HIGHLY ALT'D MAFIC TUFF with MINOR CHERT «SERT+CHT»	Colour - Mafics: lt yellow.Chert: lt. grey Grain size - fine to aphanitic - Mod. to strongly folilated @ ---------- - No remnant textures - some tight folding with Qtz rods - occas. 5-10cm chert bed	45	- intense sericite alteration and quartz flooding - occas. chl. pheno? - 50+% Qtz	5-8% dissem. py restricted to sericite and chl. bands -44.08-44.68 Qtz vein tr tet. -42.4-42.75m Qtz vein with 15% sulphides 4-5% cpy, 5%tet., 2-3% galena, 3-4% sphalerite.	No clear features to distinguish 42.75-44.2m: 40% recovery
47.45 TO 51.09	QUARTZ VEIN with SULPHIDES «QV+SUL»	Colour - White. Grain size - aphanitic Fault gouge with clay + qtz vein (44.45-44.74m) on contact. White late stage QV with micaceous pods and partings and sulphide patches {44.45-44.74} «FLT»	60		47.75-48.15 Qtz vein with 1-2% dissem py and 0.5% tet. 48.15-51.09 Qtz vein with 30-35% sulph.: 20% tet, 5% sphal, 5% py, 2% cpy. {48.15-51.09} «30-35% sul»	
51.09 TO 74.60	MASSIVE SULPHIDES and SULPHIDE RICH MUDDY TUFF «MS+MUT»	Colour - grey Grain size - very fine 51.09-52.12 is mainly massive sulphides with about 10-15% quartz-sericite gangue. This grades to sulphide rich muddy tuff with a minor cherty (quartz?) component. Primary sulphide is essentia lly pyrite with sphalerite-tet, usually associataed with silica flooding. Rarely cpy and gn can also be seen.---------- Rock is generally quite competent but strongly	55	Strong micaceous alteration throughout	51.09-52.12 85% sulphides est. 25% tet, 25% sp, 20% py, 10% gn, 5% cp 52.12-65m (approx) Averages 30-35% sulphides though local zones are almost massive pyrite. Overall: 25% py, 5% tet, 5% sp, minor cp,	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		foliated with local gouge zones and micaceous slips. These increase beyond approx. 65m. ---------- From approx. 70m on there is a distinctly cherty component.	50		gn (short sections of +/- 1m may be locally richer in sp-tet) 65-74.6 5-10% py with local kicks in sp-tet averaging 1-2% sp, 1-2% tet overall.	
74.60 TO 75.00	FAULT ZONE with QUARTZ «FLT+QTZ»	Colour - grey to white Grain size - aphanitic Broken, gougey zone with white bull quartz			minor gn-sp(-tet) in vein.	
75.00 TO 80.77	MAFIC TUFF, PYRO. «SERT»	Colour - green-grey Grain size - fine Distinct Mafic with vague frags locally. Numerous qtz veins. Non calcareous (unlike FW Mafic). Quite homogeneous. Contact knife sharp @ 30 degrees		Weak sericite-chl.	1-2% disseminated py	
80.77 TO 83.20	CHERT, CHERT BX and CHERTY ARGILLITE «CHT+» «CHT BX+» «ARG»	Colour - grey to black Grain size - aphanitic Typical grey to black "Rea Bx" type chert. Tectonically brecciated, locally folded. Strong shearing with micaceous, gougey zones.	23	Micaceous shears	5-10% fine py, in bands or disseminated.	
83.20 TO 83.30	FAULT GOUGE «FLT»	Colour - black Black, graphitic fault gouge.				
83.30 TO 89.92	MUDDY TUFF «MUT»	Colour - grey Grain size - fine Typical weakly pyritic muddy tuff. Sheared and silicified close to fault otherwise quite homogeneous debris flow. Abundant white spots of ? throughout.		Weak	«10% py» 10% py disseminated	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD5702	41.97	42.40	0.43	0.00	0.03	0.02	1.6	0.01							0.05	0.001	
BCD5701	42.40	42.75	0.35	0.62	6.28	3.29	123	0.49							3.59	0.014	
BCD5703	42.75	47.45	4.70	0.01	0.02	0.01	2.1	0.03							0.06	0.001	
BCD5704	47.45	48.15	0.70	0.03	0.01	0.01	29.4	0.34							0.86	0.010	
Averages	48.15	52.19	4.04	2.73	4.99	2.32	3508.6	4.85						3.10	102.35	0.140	
Averages	48.15	59.80	11.65	1.10	2.85	1.33	1427	2.24						3.02	41.60	0.065	
BCD5705	48.15	49.90	1.75	3.23	1.59	0.02	4250	5.66	2.41	0.36				2.95	123.96	0.165	
BCD5706	49.90	51.09	1.19	1.47	0.56	0.09	1890	3.24	0.90	0.04				2.77	55.13	0.095	
BCD5707	51.09	52.19	1.10	3.31	15.20	8.40	4080	5.30	2.17	0.35				3.70	119.00	0.155	
Averages	52.19	59.80	7.61	0.24	1.71	0.80	322	0.85						2.98	9.40	0.025	
BCD5708	52.19	53.80	1.61	0.15	1.62	0.65	148	0.56	0.08	0.01				2.95	4.32	0.016	
BCD5709	53.80	55.30	1.50	0.25	1.13	0.32	261	0.62	0.13	0.02				3.18	7.61	0.018	
BCD5710	55.30	56.80	1.50	0.15	4.12	2.10	775	1.85	0.60	0.10				3.10	22.60	0.054	
BCD5711	56.80	58.30	1.50	0.53	0.22	0.34	102	0.35	0.07	0.01				2.88	2.98	0.010	
BCD5712	58.30	59.80	1.50	0.13	1.50	0.61	338	0.92	0.28	0.02				2.89	9.86	0.027	
BCD5713	59.80	61.30	1.50	0.04	1.17	0.50	84.5	0.43						2.90	2.46	0.013	
BCD5714	61.30	62.80	1.50	0.03	0.25	0.08	23.8	0.30						3.04	0.69	0.009	
BCD5715	62.80	64.30	1.50	0.01	0.18	0.09	16	0.19						2.84	0.47	0.006	
BCD5716	64.30	65.80	1.50	0.01	0.09	0.06	7.9	0.13						2.74	0.23	0.004	
BCD5717	65.80	67.30	1.50	0.04	0.11	0.03	2.6	0.08						2.82	0.08	0.002	
BCD5718	67.30	68.60	1.30	0.44	0.08	0.02	15.3	0.10						2.80	0.45	0.003	
BCD5719	68.60	70.30	1.70	0.19	1.23	0.54	236	0.22	.27	.07				2.84	6.88	0.008	
BCD5720	70.30	71.80	1.50	0.08	0.57	0.21	111	0.22						2.77	3.24	0.006	
BCD5721	71.80	73.30	1.50	0.12	0.26	0.12	37.8	0.09						2.79	1.10	0.003	
BCD5722	73.30	74.80	1.50	0.02	1.08	0.51	89	0.18							2.60	0.005	
BCD5723	74.80	76.30	1.50														
BCD5724	76.30	77.80	1.50														

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REAI
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 691.30N
EAST: 9850.00W
ELEV: 1564.80

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

COLLAR DIP: -62° 0' 0"
LENGTH OF THE HOLE: 133.50m
START DEPTH: 0.00m
FINAL DEPTH: 133.50m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: April 28, 1987
DATE COMPLETED: April 29, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & B DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.00	-	-62° 0'	ACID	OK		-	-	-	-	-	
61.00	-	-62° 0'	ACID	OK		-	-	-	-	-	
94.00	-	-62° 0'	ACID	OK		-	-	-	-	-	
124.00	-	-62° 0'	ACID	OK		-	-	-	-	-	
132.60	217° 0'	-66° 0'	TRO-PARI		dip suspect	-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 4.30	CASING «OB»					
4.30 TO 69.09	MAFICPYRO-CLASTIC FLOW «MPYRO»	Colour - Med. Green Grain size - Med. gr. with fine gr. matrix - Lapilli size fragments flattened parallel to bedding ---------- - Lapilli rounded to sub round with weak carb and are lighter in colour than the matrix - Weakly foliated - Lapilli have chl. altered mafic phenos.	80	Weak sericite + qtz alteration pervasive Two stages of QV's: 1- pale folded early stage; 2- late stage white qtz veins up to 5cm = 2% volume Some lapilli preferentially seric. altered. - matrix chl. altered - occas. speck of green mica	- Tr to 5% dissem. py avg. 1% dissem py - occas. pyrite veinlet - occas. pyrite rimming lapilli {64.4-66.4} «QV 8% py,1% gn,1% cp» silicified zone with 5cm QV's carrying 5-8% py, 1% gal, 1% cpy, tr sphal. + tet. 66.4-67.4 Still silicified with QV's, tr. tet.	
69.09 TO 90.00	ALT'D MAFIC PYRO-CLASTICS with MINOR CHERT «MPYRO+CHT»	Colour - Lt. Green Grain size - Med. to fine gr. -Mafic Pyroclastic but intensely altered by quartz-sericite at 69.09m - no remnant features visible rock highly contorted - minor amounts of chert - fault gouge @ 84.92 and 85.32m {84.92-85.32} «FLT»		«ser» - Intense sericite alt. with quartz flooding - 10 cm qtz veins @ 73.15 with fault gouge 78.00 78.69	«3% py» - Avg 3-4% dissem. pyrite - 78.00 vein has 1+% cpy.	
90.00 TO 98.37	MUDDY TUFF «MUT»	Colour - Dk. Grey Grain size - fine Very sharp clear contact with Pyro. flow Finely laminated pyrite and qtz. syngenetic------ Occas. flattened fragments of chert up to 2cm in diameter. Fine 2-4mm chips of argillite and mafic volcs. as well as clots of py. @92.18-93.88 fault zone with gouge. {92.18-93.88} «FLT»	85	Flooded with quartz veinlets	Approx. 60% fine grained will laminated py with tr. tet. 90.00-94.77 94.77-96.00 Qtz veins with silica 2-3% sphal 0.5+% tet. 96.00-96.93 Qtz veins avg. 3-4% sphal, 1% tet. 96.03-98.37 2-3% sphal., 1% tet.	95+% recovery

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
98.37 TO 102.10	SILVER ZONE «AG ZONE»	Colour - Dk. grey Muddy Tuff Host with an average of 40-50% sulphides. Some late stage QV's and some massive tet. zones, and py, sphal, py zones approx. 10cm wide.		Qtz veins @ 99.1-99.4 100.0-100.3 101.40-101.70 Some sericitic bands 0.5cm	Avg sulphide content Py 15-20%, Sphalerite 10%, Tet. 12%, Galena 0.5% Some zones very massive tetrahedrite while others dissem. in banded pyrite. Galena restricted to vein @ 99.1-99.4 Sphal. rich @ top grading to tet. rich @ bottom.	only 75-85% recovery
102.10 TO 133.50	"MUDDY TUFF" «MUT»	Colour - Med. grey Grain size - fine Finely laminated slump bx. with chert and argillite fragments 40-60% f.gr pyrite laminations---------- occasional lamination of sericite Fault zone with badly broken rock at {108.1-108.8} «FLT» Fault zone with badly broken rock at {112.17-113.17} «FLT» @ 125M bedding at ---------- Fault zone with clay gouge at {126.6-126.8} «FLT»	80 85	Flooded with Qtz. + some sericite laminations.	«40-60% py» 40-60% laminated and dissem. f.gr.py 102.11-106.61 Avg. 2% sphal 1% Tet. in larger 5-10cm QV's heavy pyrite 60% 106.11-127.00 Generally 30-40% py with tr. sphal + tet. in quartz veinlets. Occ. quartz veins with mineralization. 2cm @ 110.15 with 5% sphal, 3% tet. 115.00-115.30 QV with 3% sphal, 1% tet 50% py 117.30-117.50 QV with 5% sphal, 1-2% Tet., 40% py 118.00-118.1 QV with 10% sphal, 2% tet. 120.7-120.8 QV with 2% sphal, 1% tet., 10% py 102.7-133.50 30-40% py, barren with 10% QV's	90% recovery

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD5723	90.00	91.50	1.50				4.1	0.06			84	442	68				
BCD5724	91.50	93.00	1.50	0.01	0.03	0.02	4.1	0.02						2.90	0.12	0.001	
BCD5725	93.00	94.77	1.77	0.01	0.29	0.12	10.3	0.17						2.80	0.30	0.005	
BCD5726	94.77	96.93	2.16	0.04	1.28	0.60	46.5	0.70						2.89	1.36	0.020	
BCD5727	96.93	98.37	1.44	0.07	1.59	0.69	83.4	0.43						2.79	2.43	0.013	
Averages	98.37	102.11	3.74	1.71	2.64	1.13	1929	3.10						2.89	56.30	0.090	
BCD5728	98.37	99.10	0.73	0.14	2.83	1.97	190	0.89						2.84	5.54	0.026	
Averages	99.10	102.11	3.01	2.10	2.60	0.93	2350.4	3.63						2.91	68.70	0.106	
BCD5729	99.10	100.00	0.90	1.74	5.24	2.04	1990	3.36	1.08	0.15				2.97	58.04	0.098	
BCD5730	100.00	101.00	1.00	1.18	2.20	0.88	1310	1.80						2.87	38.21	0.053	
BCD5731	101.00	102.11	1.11	2.22	0.81	0.07	3580	5.50	2.50	0.27				2.89	104.42	0.160	
BCD5732	102.11	103.61	1.50	0.03	1.01	0.46	41	0.29						2.97	1.20	0.008	
BCD5733	103.61	105.11	1.50	0.12	0.30	0.27	92.5	0.38						2.76	2.70	0.011	
BCD5734	105.11	106.61	1.50	0.07	0.69	0.50	32.6	0.63						2.95	0.95	0.018	
BCD5735	106.61	108.11	1.50				3.6	0.40			46	550	665				

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 550.40N
EAST: 9806.00W
ELEV: 1542.60

ALTERNATE COORDS GRID: FIELD
NORTH: 5+43N
EAST: 97+90W
ELEV: 1542.60

COLLAR DIP: -49° 0' 0"
LENGTH OF THE HOLE: 53.34m
START DEPTH: 0.00m
FINAL DEPTH: 53.34m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: April 29, 1987
DATE COMPLETED: April 29, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: NONE
CORE STORAGE: BARRIERE

PURPOSE: TO TEST DOWNDIP EXTENSION OF SILVER ZONE NEAR A 28 PPM AG ANOMALY

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
0.00	-	-49° 0'	ACID	OK		-	-	-	-	-	
44.80	-	-51° 0'	ACID	OK		-	-	-	-	-	
53.00	213° 0'	-52° 0'	TRO-PARI		dip suspect	-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 18.91	CASING <OB>					
18.91 TO 37.50	GREYWACKE and ARGILLITE <WAK+ARG>	Colour - Grey to black Grain size - med to fine - Interbedded greywackes with 5-20 cm bands of argillite ---------- - Argillite finely laminated while wackes finely bedded---------- - Qtz vein - 10cm @ 20.8m	85 85	Occas. qtz veinlet	<1-2% py> 1-2% dissem py 25.73-25.85m a bed of 80% pyrite in wackes 26.11-26.32m 60% py in argillite 31.91-32.16m a qtz vein with strong sericite selvages. Vein contains 5% py, 1% sphal, 1% tet. 30.47-37.5 argillites and wackes contain 5-8% py with tr sphal.	Argillite probable Max-min conductor
37.50 TO 45.60	"MUDDY TUFF" MAJOR FAULT ZONE <MUT+FLT>	Colour -med. grey Grain size - fine Strong sediment component of siltstone in a clay rich matrix in the breccia. Fragments angular to subrounded from 0.5-3.0cm. Fragments of siltstone and quartz and small chips of argillite Bedding -Intensely faulted with clay.	65	Strong clay alteration. No carb.	<40% py> - 40% py as fine laminations and dissem - some quartz veinlets contain a trace tet.	NB: slump by strong faulting
45.60 TO 53.30	GREYWACKE <WAK>	Colour - med grey Grain size - med. Finely laminated greywacke----------	80	Occasional Qtz veinlet	<10-12% py> - Avg. 10-12% dissem. py and fine veinlets - 45.4-45.6 qtz vein with 50% py.	

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REAI
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 550.40N
EAST: 9806.00W
ELEV: 1542.60

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 60.05m
START DEPTH: 0.00m
FINAL DEPTH: 60.05m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: April 30, 1987
DATE COMPLETED: May 1, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
33.50	-	-88° 0'	ACID	OK		-	-	-	-	-	
60.00	-	-86° 0'	ACID		suspect	-	-	-	-	-	
59.00	122° 0'	-87° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 9.14	CASING «OB»	Mainly through weathered bedrock.				
9.14 TO 23.47	SEDIMENTS and QUARTZ VEINS «ARG+QV»	Only 10-15% recovery of pebbles. Mainly barren quartz, argillite and some grit----------	50 ?	Minor sericite in some pebbles	Local pyrite in the seds.	10-15% recovery.
23.47 TO 26.00	QUARTZ VEIN «QV»	Colour - white to grey Grain size - aphanitic Mainly bull quartz-healed breccia-grading to greyish, impure quartz (almost smoky).			«3% py» 3-4% pyrite. Minor cp-tet in one thin veinlet.	30% recovery
26.00 TO 42.50	MUDDY TUFF «MUT»	Colour - grey Grain size - very fine Typical strongly foliated, schistose muddy tuff with numerous gougey zones. Vaguely gritty or fine detrital flow. 38.4-38.7 Graphitic argillite. Around 41m may be remnant seds. ----faulted contact at ----------	25 0 50 45	Intense micaceous (sericite/clay)	Up to 25% finely disseminated pyrite locally, but overall relatively low.	
42.50 TO 60.05	MAFIC VOLCANIC «MT»	Colour - dark grey Grain size - fine Fairly featureless though local vague frags. Homogenous, waxy, much less foliated than Muddy Tuff. END OF HOLE	70 - 75		«tr py»	
60.05 TO 77.60						

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: I

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 691.30N
EAST: 9850.00W
ELEV: 1564.80

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

COLLAR DIP: -82° 0' 0"
LENGTH OF THE HOLE: 148.50m
START DEPTH: 0.00m
FINAL DEPTH: 148.50m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: April 29, 1987
DATE COMPLETED: May 1, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
32.60	-	-82° 0'	ACID	OK		-	-	-	-	-	
93.60	-	-78° 0'	ACID	OK		-	-	-	-	-	
142.30	-	-73° 0'	ACID		suspect	-	-	-	-	-	
142.30	216° 0'	-74° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.05	CASING «OB»					
3.05 TO 46.70	MAFIC PYRO-CLASTIC «MPYRO»	Colour - Med. green Grain size - fine Matrix strong chl. alt. Bedding 16m ------ Lapilli round to sub-angular 2-6cm in length with remnant mafic phenos chl. alt., lapilli sericite alt. Bedding @ 35m ---- Some lapilli have calcite spherulites?	45 45	Chl. alteration pervasive in matrix Lapilli sericite and mod. carb. alt. occas. Qtz vein approx. 5% up to 10cm - some hematite on fract. 40-41m.	«5-10% py» 3.05 - 5-20% py as veinlets and dissem. Avg 5-10% 46.6m - 1 cm Qtz veinlet with 5% tet, 2% cpy.	
46.70 TO 72.90	ALTERED MAFIC PYRO-CLASTIC «MPYRO»	Colour - lt. green to lt. yellow Grain size - med. to fine Sericite alt. increasing till it obliterates original features, Qtz vein stockwork. Strong fault 64.9-65.5 with clay gouge and shattered rock.		«ser» Sericite + Qtz alt. steadily increasing. Green micas - fuchsite? common in lapilli. Qtz veins 10-15%.	«2% py» Py generally low approx. 2-3% dissem. and veinlets.	
72.90 TO 96.20	MAFIC TUFF with CHERT and MINOR ARGILLITE «SERT+CHT» «+ARG»	Colour - Lt. yellow Grain size - fine to aphanitic 72.9-75.3 Finely laminated argillite, sericite alt. mafic tuff and chert with some rounded and flattened chert frags to 1cm 75.3-92.9 60% chert with 30-40% sericite slt. mafic tuff. often very contorted. occas. argillite. occas. subround chert fragment 1-5cm in diameter. 77.8-78.7 «FLT» Fault with clay gouge 90.53-90.9 «FLT» Fault with clay gouge	45	Sericite alt. to mafic tuff. occas. QV. Mafic volcs. strongly sericite alt. Mafic volcs. strongly sericite alt. Occas. QV.	Average 3-5% dissem py Tr py dissem. +2% dissem. py	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		92.9-96.2 Alt'd mafic tuff, chert and argillite laminations appear often highly contorted (soft sed. deform.)	45			
96.20 TO 119.80	MUDDY TUFF «MUT»	Colour - med grey Grain size - fine Contact is a fault with clay gouge + qtz chips 96.4-96.7 Fine gr. argillite and pyrite matrix with small quartz and siltstone chips in a finely laminated matrix Bedding- Faults with clay {99.67-99.77} «FLT» {110.0-110.2} «FLT» 102m-Fragments of pyrite appearing	45	Irregular QV's approx. 5% vol. Veins increase to 10% @ 105m. Silicification and veinlets become much more intense	«40-50% py» 40-50% dissem. + laminated, fgr. pyrite in the matrix 110.8 - 0.5cm vein (QV) with 10% sphal, 1% tet. 111.25 - 0.5cm Qtz vein with 15% sphal, 2% tet. 112.1 - 5cm QV with 3% sphal, tr tet. 112.7-113.1 - 2% sphal, tr Tet. in QV. 113.80-114.45 Avg 2-3% sphal, 1-2% tet 114.45-119.8 veins carrying sulphides average 1% sphal, tr tet over whole width except 114.9-115.2 10% sphal, 3% tet.	
119.80 TO 121.20	SILVER ZONE «AG ZONE»	Colour - lt. grey Grain size - fine Hosted in muddy tuff a strongly silic. zone with 40-50% sulphides.		Strongly silicified	119.8-121.2 Silicified zone with 7% sphal, 3-4% tet, 40% py	
121.20 TO 148.50	"MUDDY" TUFF «MUT»	Colour - Lt. grey Grain size - fine Argillite with pyrite in matrix. Fragments of chert, argillite and pyrite. Unit very well laminated ---------- Fragments vary from 2mm-3cm	45	Mineralization appears to be related to areas of silicification.	«40% py, 1-8% sp, tr tet» 121.2-122.6 Avg 1-2% sphal, tr tet unit avg 40% fgr. py as veinlets + dissem. occas. veinlet of Qtz with 3-5% sphal, 1% tet	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
					129.55-130.75 Matrix carries 60% py, 8% sphal, 1% tet in QV's over width 133.6-134.05 QV's with 7-8% sphal, 1% tet 128.70-134.0: 60% py	
		131.2-148.5 Unit becomes much more brecciated with good soft sediment features i.e. slumping. Bedding --- Fault zones with clay gouge @ {123.9-138.0} <FLT> {145.2-145.4} <FLT> END OF HOLE	45		132.60-133.0 QV zone with 30% py, 10% sphal, 1% tet. 134.05-149.05 every 30-50cm a small 2-4cm QV can be seen with 5-10% sphal and 1% tet (stringers?).	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD5746	113.80	114.45	0.65	0.85	1.09	0.87	156	0.55	.51	.18				3.01	4.55	0.016	
BCD5747	114.90	115.20	0.30	0.80	3.41	1.76	120	0.75	.52	.21					3.50	0.022	
BCD5748	117.70	118.70	1.00	0.07	0.74	0.43	14.3	0.21							0.42	0.006	
BCD5749	118.70	119.80	1.10	0.04	0.32	0.19	10.7	0.24						2.89	0.31	0.007	
BCD5750	119.80	121.40	1.60	0.08	2.38	1.44	22.6	0.42						3.03	0.66	0.012	
BCD5751	121.40	122.60	1.20	0.02	0.43	0.21	6.3	0.38						2.98	0.18	0.011	
BCD5752	129.55	130.75	1.20	0.05	2.35	1.00	17.8	0.19						3.42	0.52	0.006	
BCD5753	132.60	133.00	0.40	0.15	2.04	1.38	34.4	0.32						3.29	1.00	0.009	

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: I

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 550.00N
EAST: 9839.10W
ELEV: 1530.00

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 50.90m
START DEPTH: 0.00m
FINAL DEPTH: 50.90m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: April 30, 1987
DATE COMPLETED: May 1, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
23.50	-	-50° 0'	ACID	OK		-	-	-	-	-	
49.90	226° 0'	-56° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 9.45	CASING «OB»					
9.45 TO 16.30	QUARTZITE «QITE»	Colour - Lt. green Grain size - med. Mgr. quartzite with granoblastic grains. Matrix sericite alt'd Weak mod. foliated ---------- 14.33-16.3 fault zone with rubble + QV's. {14.33-16.3} «FLT»	45	Pervasive sericite alt. in matrix. Occas. Qtz. veinlet.	1-2% dissem. py.	14.33-17.37 10% recovery
16.30 TO 16.50	SULPHIDE ZONE «SUL»	Colour - dk grey An extremely weathered 6cm piece which is probably correlative to the silver zone (only 20% recovery)		Strong weathering	approx 10% py approx 40% tet approx 5% sphal rest quartz in extremely weathered sulphides.	Fault zone
16.50 TO 50.98	"MUDDY TUFF" SEDIMENTS «MUT»	Colour - dk. grey to lt. grey Grain size - fine to med. 16.4 - 35.66 - A slump bx. with round to sub-angular fragments from 2mm-2cm in diameter Bedding- - they consist of argillite, siltstone, quartzite and occas. sericite alt. volc.? -occas sericite lamination {23.4-25.0} «FLT» - Fault zone with clay gouge Bedding- 30% recovery in the fault 31.0-31.3: fault with clay gouge. {31.0-31.3} «FLT» 35.66-38.0 A mgr. siltstone-quartzite with 1mm grains of qtz + FP's in a sericitic matrix. 35.66-50.89 "Muddy Tuff" slump breccia 3mm-1cm rounded fragments of siltstone, sericite	60 80	Some silic. and some sericite alt. Matrix weakly sericite alt. occas. Qtz vein Weak sericit alt. in volc?	10-20% py as laminations + dissem. 2-3% py mainly as veinlets {35.66-50.99} «10% py» 10% pyrite as veinlets and disseminatioins.	(a subunit which makes up much of the muddy tuff)

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		altered volcs? and minor argillite. Bedding- - occasional green mica - occas. siltstone and volc. tuff lamination	80	frags and occas. laminated.		
50.98 TO 85.46						

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG g/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	SG	AG oz/t	AU oz/t	COMMENTS
BCD5741	16.30	16.50	0.20	2.26	44.30	0.78	595	1.87	.31	.04				3.49	17.35	0.055	

INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 685.10N
EAST: 9808.40W
ELEV: 1571.00

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

COLLAR DIP: -80° 0' 0°
LENGTH OF THE HOLE: 136.85m
START DEPTH: 0.00m
FINAL DEPTH: 136.85m

COLLAR GRID AZIMUTH: 180° 0' 0°
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0°

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: YES

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

CONTRACTOR: G & D DRILLING
CASING: NONE
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
32.61	-	-79° 0'	ACID	OK		-	-	-	-	-	
136.86	-	-75° 0'	ACID	OK		-	-	-	-	-	
136.00	216° 0'	-72° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.66	CASING <OB>					
3.66 TO 54.80	MAFIC PYRO-CLASTIC <MPYRO>	Colour - green. Grain Size - fine grained. - Crowded block and lapilli size fragments. - Amygdule and flattened mafic phenos within frags 1-2mm. - Slightly flattened. - Ashy matrix, fine grained to very fine grained, well foliated. - Carbonate veinlet, some siliceous veins 1mm - 1cm throughout.	70	Moderate chlorite with strong chlorite on fracture surfaces. Carbonate attacks frags and increases downhole. 52.02 appearance of sericite.	<tr py> Nil. Trace to 1%.	BAS Tbx Scoriaceous frags with silica and mafic filled flattened amlygdules, some chloritic wisps within frags have delicate boundaries resembling fiamme.
54.80 TO 72.24	ALTERED MAFIC PYRO-CLASTIC <MPYRO>	Colour - pale yellow and green. Grain Size - fine grained. Contact gradational ---------- - Monolilthic block and lapilli tuff - breccia. 56.83 - 56.87 - Fault gouge. Contact sharp @ ----------	70 55	<mod ser> - Moderate sericite appears to attack fragments first. - Matrix moderate to strong chlorite. - Quartz carbonate veins and knots becoming more abundant downhole.	<3-5% py> Pyrite increases to 3-5% fine dissem.	
72.24 TO 75.37	CHERTY ARGILLITE & MINOR TUFF <CHT ARG+>	Colour - grey & pale green. Grain Size - fine grained. Silicified argillite with quartz knots. Occasional fine pyrite tuff units (light grey). Contact sharp @ ----------	55 60	- wormy quartz knots & veinlets through out - trace flecks of emereald green mica.	<5% py> 5% pyrite throughout section. Tuffaceous units may be up to 10% v.f.g.py. 74.89 - 75.37 (1% tet., 1% sphalerite, tr cp, tr gal.	Unit is without black chert and lacks graphitic component. 74.87 - 75.37 Geochem 5776

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
75.37 TO 80.45	ALTERED MAFIC PYRO-CLASTIC <MPYRO>	Colour - yellow, black, light grey, streaky. Grain Size - very fine grained. Laminated argillite, ash and chert. - soft sediment deformation throughout. - slumped and broken beds - contorted units. - some beds broken with feathered edges. - sericite (ash) decreases as argillite units pick up downhole. Contact Gradational ----------	70	<ser> - ash represented by sericite.	<1% py> Tr - 1% pyrite.	79.50 to 80.45 Rubble Zone
80.45 TO 80.50	FAULT <FLT>	<c, gp gouge> Clay and graphitic gouge.				
80.50 TO 88.20	BLACK CHERTY ARGILLITE <CHT ARG>	Colour - black & light grey. Grain Size - fine grained. Slumped and brecciated beds of argillite & chert laminae. - graphitic component to argillite - kinked cherty beds common - numerous, crosscutting veinlets Contact sharp at approx. ----------	60	Quartz veining frequent.	<5% py> Pyrite to 5% in form of 1-2cm broken frags? associated with quartz.	
88.20 TO 90.52	MAFIC TUFF <MT>	Colour - pale yellow. Grain Size - fine grained. Massive, homogeneous looking. Contact indistinct.		- weak - sericite alteration.	Tr - 2% pyrite.	Poss. dyke/sill candidate.
90.52 TO 95.55	BLACK CHERTY ARGILLITE <CHT ARG>	Colour - black & grey. Grain Size - fine grained. - badly broken up rubble zone. 93.57 - Fault, some 2 metres lost, marked by drillers. Contact sharp @ ----------	50			Drill crew misplaced pieces here 93.40.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
95.55 TO 96.00	ALTERED MAFIC PYRO- CLASTIC? <SERT>	Colour - pale yellow. Grain Size- fine grained. - Moderate - strongly foliated - poss. lapilli or compressed chert frags in ash matrix. Contact broken up. Moderate - strong foliation @ ------------------	 60 65	Strong sericite and clay.	2-3% dissem. pyrite. 10-15% pyrite in laminae increase towards bottom of unit.	
96.00 TO 123.45	CHERT BRECCIA & MINOR TUFF UNITS <CHT BX+> <SERT>	Colour - light grey. Grain Size - fine to very fine grained. Massive chert fragments in a sulphidic muddy matrix - frags dominate. Occasional thin wisps of argillite. Tuff - occasional heterolithic, lapilli size. 96.76 - 96.86 Sulphidic mud, 60% pyrite. 97.60 - 97.90 Quartz vein and pyritic clay gouge. 103.91 - 104.30 Heterolithic clastic unit LT, frags of white and black chert, chardy shapes frag orientation ------------------------------ occuring between two qtz-sp-ga stringers.	 83	Moderate sericite and siliceous veining cross-cutting foliation.	<5-10% py> 5-10% pyrite in matrix. Tr sp throughout. 100.51 - 100.60 Quartz-sulphide vein 40% py, 15% sp, 5% tet. 103.72 - 104.10 10% sphal, 3% tet, 7-10% ga, 15% py. Contained within three 10-20 cm siliceous zones. {105.92 - 106.01} <SMS> Near massive sulphide bed 40-60% fine pyrite @ 65. 106.45 - 107.95 Leaner section 3-4% sp, 1-2% tet in three siliceous 10-20cm zones.	 Poss. stringer. 103.6 - 104.6 BCD 5777 BCD 5778
		{110.38 - 110.63} <SMS> Near massive sulphide pyrite to 60% with silica.		109.45 - 110.45 5-7% sp, 3-5% tet, 1-2% galena 10-20% local pyrite associated with siliceous zones.		BCD 5780
		110.78 - 110.85 Siliceous stringer carrying heavy pyrite & sp. 112.65 - 112.75 Stringer in heterolithic LT.		Sp 3-5%, tet 2%, py 15%. Sp approx. 3%, tet 2%, ga </= 1%.		
		113.10 - 113.14 Sulphides within siliceous zone.		Tet 3%, sph. tr py. 117.85 - 118.85 5% sp, 3-4% tet, <1% ga, 10-15% py. 121.45 - 121.50 Siliceous stringer 2-3% sp, 1-2% tet.		 BCD 5781

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		122.0 - 122.15 Pyritic laminae containing sphalerite possibly syngenetic.	70		121.98 - 122.05 5-10% sp.	
123.45 TO 123.95	FAULT GOUGE <FLT>					
123.95 TO 131.00	CHERTY ARGILLITE <CHT ARG>	Thinly bedded to laminated cherty argillite and sulphidic mud numerous siliceous stringers and knots semiconformable. {129.0 - 130.0} <FLT> Cherty material & fault gouge. {130.0 - 131.0} <FLT> Broken chert and fault gouge.		Moderate sericite.	5-25% py locally. 124.62 - 124.68 Siliceous stringer with 1% sp and 2% tet, </= 1% ga? 127.70 - 127.9 Siliceous stringer with 5-10% py, 2-3% tet (ga?) 129.0 - 130.0 5% sp, 2-3% tet?, 10% py? 3-5% py, fine grained sp & ga? in gouge.	Broken core. Have these siliceous zones been forcibly injected into sulphidic mud and thereby disrupting the bedding. BCD 5782 Geochem 5782 Any Au?
131.00 TO 131.67	NEAR MASSIVE SULPHIDE <SMS>	131.0 - 131.67 Near massive sulphide. Minor qtz-veining.			Py - 25-50% locally in bands	
131.67 TO 136.85	CHERT BRECCIA <CHT BX>	131.67 - 132.5 Quartz-sp stringers in a sulphidic sericitic mud grades down into a sericitic pyritic mud downhole. Occasional quartz veinlet at lower argillite component than above unit.	90	Moderate - strong sericite matrix.	131.0 - 132.5 Sp 4-5%, tet </= 1%. ga </= 1%. 136.6 3-5% sphalerite veinlets at 90 to CA.	BCD 5783 May be correlative with "muddy tuff".

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5776	74.90	75.40	0.50	0.05	0.42	0.30	7.9	0.02							0.23	0.001	
BCD5777	103.60	104.60	1.00	0.35	2.57	1.72	89	0.43						2.96	2.60	0.013	
BCD5778	106.50	107.50	1.00	0.05	0.93	0.41	17.8	0.26							0.52	0.008	
BCD5779	107.95	108.95	1.00	0.10	3.32	2.90	68	0.45						3.00	1.98	0.013	
BCD5780	109.45	110.45	1.00	0.30	1.50	0.86	110	0.46						2.93	3.21	0.013	
BCD5781	117.85	118.85	1.00	0.51	1.02	0.38	156	0.62						2.78	4.55	0.018	
BCD5782	129.00	130.00	1.00	1.60	3.03	1.80	344	0.40	.86	.24					10.03	0.012	
BCD5783	131.00	132.50	1.50				9	0.03			365	880	760				

.INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 550.00N
EAST: 9839.10W
ELEV: 1530.00

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 42.70m
START DEPTH: 0.00m
FINAL DEPTH: 42.70m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 1, 1987
DATE COMPLETED: May 2, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
42.00	-	-88° 0'	ACID	OK		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 0.00 TO 9.45	CASING <SERT>	Colour - medium green Grain Size - fine grained intensely sericite altered as a fine grained matrix but an interval 12.85-13.25 shows medium grained qtz grains in a sericite matrix.		Intense sericite alteration and silicification by quartz veins.	Two 2cm veinlets with 80% py the rest has 0.9-1.0% disseminated py.	approx. 60% recovery
9.45 TO 15.20	STRONGLY					
TO 11.28	ALT'D	Colour - white Grain size - aphanitic		Quartz vein with sericite selvages	11.28 - 12.80	60% recovery
TO TO TO 15.20						
11.28	QTZITE? OR	Milky white quartz vein with 10% sulphides			QV with 1% tet, tr cpy	
15.20 15.20 15.20						
	MUDSTONE	- 12.80 - 13.80 (approx) sericite alteration,				
		quartzite or mudstone section.			12.80 - 13.80	
					tr cpy, tet	
					13.80 - 15.20	
					6% tet, 1:2% cpy, 0.5%	

	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
			sphal as blebs + stringers.	
tic to me d chert		5-10% QV's sericite alteration	<15% py>
15% syngenetic pyrite as thin beds + dissem.	
c vein		sericite altered frags sericite has a malachite green colour to some or fuchsite?	2-3% py + tr cpy as stringers.	
x metimes n. Small nsisting ------- -------- --------	60 30 70	Volcs. sericite alteration 5-10%. Quartz veinlets +/- pyrite.	<40% py>
pyrite average as 40% fine grained disseminations and laminations. Occas. rim or forms fragments.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SB	Ag oz/t	Au oz/t	COMMENTS
BCD5743	0.00	12.80	12.80	1.00					0.80				14	75.00	27.00		
BCD5744	0.00	13.80	13.80	0.45		0.90	4.52	0.01	395.00	0.04							
BCD5745	0.00	14.25	14.25	0.95		2.14	0.38	0.01	2010.0	2.07							
BCD5742	11.28	12.80	1.52	.062	0.03	0.01	43.9	0.01	.03	.01							
BCD5743	12.80	13.80	1.00				0.8	0.005			14	75	27				
BCD5744	13.80	14.25	0.45	0.895	4.52	0.01	395	0.04	.20	.02				2.75	11.52	0.001	
BCD5745	14.25	15.20	0.95	2.14	0.38	0.01	2010	2.07	1.06	.02				2.75	58.63	0.06	

INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 566.70N
EAST: 9883.20W
ELEV: 1517.60

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 38.71m
START DEPTH: 0.00m
FINAL DEPTH: 38.71m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 2, 1987
DATE COMPLETED: May 3, 1987
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: YES

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
25.90	-	-85° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 6.10	CASING <OB>					
6.10 TO 16.97	QUARTZITE with MINOR CHERT <QITE+CHT>	Colour - Lt. grey to grown Grain size - med. Finely laminated granoblastic with occasional chert band Some coarse quartzites with Argillite? chips. |14.75-15.00| <FLT> Fault gouge with clay and qtz chips	45	Pervasive sericite alteration in the matrix. Occasional quartz and sericite veinlet. Fractures at top weathered	<5% py> Occas. py veinlet Dissem py 3-30% Averages 5%	
16.97 TO 19.70	MASSIVE SULPHIDES "SILVER ZONE" <MS	<silver zone> Colour - black-yellow Grain size - fine almost massive sulphides in a qtz vein matrix.		Qtz veinlets + matrix	16.97-18.97 90% sulphides hard to distinguish: 50+% sphal, 30+% tet., 2-3% cpy. Qtz matrix with mica 18.97-19.7 95% sulphides with quartz + mica: 50% py, 40% cpy, 5% tet.	18.0 to 20.9 only 40% recovery
19.70 TO 21.17	QTZ VEIN with FAULT GOUGE <QV+FLT>	Colour - white Grain size - massive A quartz vein with clay and sheared "Muddy Tuff"		Qtz + clay alteration	<5% py, 2% cpy, tr tet> 5% py as dissem. and veinlets 2% cpy as veinlets and blebs tr to 1% tet.	20.42-22.86 75% recovery
21.17 TO 38.71	"MUDDY TUFF" <MUT>	Colour - med. grey Grain size - fine Bedding- A muddy slump breccia with fragments of argillite, pyrite and chert up to 2cm in diameter. Strong fault zone 23.26-28.96m 25% recovery with clay gouge and chips. |23.26-28.96| <FLT> END OF HOLE	30	Occasional QV's and silica flooding in zones.	22.17-22.6 40% py, 10% sphal, tr. tet |22.6-38.71| <40-50% py> 40-50% py as fine bands and dissem.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
Average	16.97	19.70	2.73	6.90	39.00	1.26	1675	1.76						4.01	48.90	0.051	
Average	16.97	21.17	4.20	4.61	25.50	0.83	1192	1.25							34.80	0.036	
BCD5736	16.97	17.97	1.00	3.59	47.50	0.82	3220	3.00	1.92	0.22				3.93	93.92	0.088	
BCD5737	17.97	18.97	1.00	1.68	56.00	0.31	338	0.98	0.16	0.01				3.93	9.86	0.029	
BCD5738	18.97	19.70	0.73	18.60	4.19	3.18	1390	1.13	0.73	0.08				4.23	40.54	0.033	
BCD5739	19.70	21.17	1.47	0.36	0.24	0.01	295	0.30	.31	.04					8.60	0.009	
BCD5740	21.17	22.26	1.09	0.01	0.01	0.01	1.4	0.02						2.99	0.04	0.001	

OVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 619.00N
EAST: 9887.60W
ELEV: 1525.90

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

COLLAR DIP: -57° 0' 0"
LENGTH OF THE HOLE: 75.30m
START DEPTH: 0.00m
FINAL DEPTH: 75.30m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 3, 1997
DATE COMPLETED: May 4, 1997
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: YES

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
53.60	-	-56° 0'	ACID	OK		-	-	-	-	-	
73.00	220° 0'	-55° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 12.50	CASING <OB>					
12.50 TO 37.00	ALTERED MAFIC TUFF with CHERT <SERT+CHT>	Colour - light green - yellow Grain Size - fine grained - aphanitic Finely laminated sericite altered mafic tuff or ash with white to grey chert beds interbedded with grey chlorite wisps. Occasional zone with chert fragments (as rip-ups?) 1 to 5cm rounded to subangular. Bedding 25m ---------- 27.6 - 27.9 Milky white quartz veins. Fault Zone with blocky ground. {32.9 - 33.9} <FLT> {33.9 - 37.0} <FLT> Quartz vein with 34.9 - 37.0 5-10% sulphides + sericite on fractures.	80	Strong sericite alteration with some silicification around quartz veins.	<10% py> Average 10% dissem (+ stockwork?) pyrite in the tuffs. Occasional, 5-10cm quartz veins with 60% pyrite. 34.9 - 37.0 Quartz veins with 5-10% sulphides, 2-3% dissem. pyrite, 1-2% tet. A white fibrous mineral makes up 5-10% of volume (white sphal?).	
37.00 TO 42.80	FINE GRAINED QUARTZITE OR TUFF? <QITE>	Colour - light yellow Grain Size- fine grained Strong Fault 36.8 - 37.6 on contact with clay gouge. A finely laminated rock with a sericite matrix and fine 2-3mm chert + pyrite fragments. Bedding & foliation @ 38m ----------	80	Matrix strongly sericite altered.	Averages 10% dissem. pyrite with up to 20% in small zones.	N.B. a more tuffaceous equivalent of rocks called a quartzite.
42.80 TO 53.60	"SILVER ZONE" <AG ZONE>	Colour - grey - white - light green Grain Size - fine grained - aphanitic Host rock is the fine tuff or quartzite. Milky white quartz veins carry heavy sulphide mineralization. Bedding @ ---------- Vein Contacts @ ----------	80 70 - 80	<lg qv's> Large quartz veins.	42.8 - 42.9 40% quartz, 60% sulphides 15-20% galena, 1-2% cpy, 1-2% sphal, 35-40% Tet. 42.9 - 43.2 Quartzite with 1-2% Tet. 43.2 - 44.8 Milky quartz vein. 30% sulphides. Avg. 20% Tet, 3% galena, 2% cpy, 2-3% sphal, 1-2% py as blebs + veinlets 44.8 - 46.4 only 50% recovery in quartzite with quartz veins	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
					40% with 5% cpy, 5% tet, 10% galena. 46.4 - 48.2 Quartz veins badly ground only 50% recovery. Avg. 8-10% cpy, 4-5% sphal, 6% galena, 2-3% tet. 48.2 - 53.6 Mixture of quartz veins and quartzite 50-50% badly ground with 50% recovery, 1-2% dissem. tet avg. in veins.	Zone has only about 60% recovery overall.
53.60 TO 60.00	CHERT BRECCIA «CHT BX»	Colour - light grey Grain Size - aphanitic - fine grained Contact is strongly faulted and broken with chips + clay gouge. 53.6 - 54.10 A chert breccia with 10-20% argillite in the matrix. Light grey - light green chert beds highly contorted and slumped. Fragments 5mm - 5cm and angular rip-ups. Minor sericite (mafic volcanics) laminations. Bedding @ 55m ----------	70	Weak quartz & sericite alteration.	«40% py» 40% pyrite as laminations (fine grained) and medium grained veinlets.	
60.00 TO 75.30	"MUDDY TUFF" «MUT»	Colour - medium grey Grain Size - fine-medium grained A muddy fine grained pyritic matrix supports angular fragments from 3mm to 4cm of argillite, chert + pyrite. Fault Zone with clay gouge. {62.0 - 62.4} «FLT» Bedding 63m @ ---------- Fault Zone with quartz veins. {64.7 - 65.5} «FLT» Bedding 75m @ ----------	45 80	Some silicification by quartz veins.	«50% py» 60.0 - 60.3 Quartz veins carry 50-60% py and a green mica 5+% (fuchsite?). Zone avg. 50% fine grained pyrite. Some pyritic zones up to 80%.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5764	34.90	35.70	0.80	0.07	0.08	0.02	68	0.02						2.75	1.98	0.001	
BCD5765	35.70	36.50	0.80	0.04	0.05	0.02	53.9	0.22						2.89	1.57	0.006	
Average	42.80	48.20	5.40	2.63	1.96	1.65	2740	4.94						3.09	79.90	0.144	
BCD5766	42.80	43.20	0.40	10.70	1.79	3.65	14200	12.45	6.20	1.02				3.60	414.70	0.363	
BCD5767	43.20	44.00	0.80	6.18	1.26	1.72	6500	13.60	3.78	.52				3.25	189.58	0.397	
BCD5768	44.00	44.80	0.80	1.13	0.18	0.03	815	1.40	.47	.08				2.78	23.77	0.041	
BCD6769	44.80	46.40	1.60	0.49	1.05	0.64	455	1.13	.58	.18				3.09	13.27	0.033	
BCD5770	46.40	48.20	1.80	1.82	3.92	2.78	1410	4.39	.75	.12				3.05	41.13	0.128	
BCD5771	48.20	50.90	2.70				140	0.27			1400	770	110				
BCD5772	50.90	53.60	2.70				8.2	0.04			106	350	107				
BCD5773	60.00	60.30	0.30				2.4	0.02		2600.0	200	720	560				

NOVA INC.
D. HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 643.90N
EAST: 9813.40W
ELEV: 1559.70

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

COLLAR DIP: -58° 0' 0"
LENGTH OF THE HOLE: 93.48m
START DEPTH: 0.00m
FINAL DEPTH: 93.48m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 3, 1987
DATE COMPLETED: May 5, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
42.06	-	-58° 0'	ACID	OK		-	-	-	-	-	
70.71	-	-61° 0'	ACID	OK		-	-	-	-	-	
92.00	220° 0'	-59° 0'	TRO-PARI	OK		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 6.10	CASING <OB>					
6.10 TO 44.20	MAFIC PYRO-CLASTICS <MPYRO>	Colour - medium green. Grain Size - fine grained. Fine grained strongly chl. altered matrix with flattened lapilli size fragments, which are sericite altered with mafic P's remnant but chl. altered. Bedding @ 27m ---------- 29.0 - 30.05 A vuggy quartz vein with tr cpy + tet. Fault with clay gouge @ 13.72.	70	Matrix strongly chl. altered. Lapilli sericite and strongly carb. altered. Quartz veins approx. 5cm common.	<1% py> Averages 1% dissem. py.	
44.20 TO 47.50	ALTERED MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light yellow. Grain Size - fine grained - aphanitic. Strong volcanic matrix with thin chert beds and occasional chert fragments up to 5cm (rounded). Volcanic was probably a tuff.		Volcanic rock is highly sericitized and silicified.	Avg. 1-2% dissem. py.	
47.50 TO 63.40	ARGILLITE + CHERT WITH MINOR MAFIC TUFF <ARG+CHT>	Colour - medium grey. Grain Size - fine grained - aphanitic. Lots of soft sediment deformation with slumping etc. Mafic tuff is sericite altered. The rock is finely laminated. Bedding @ 48.5m ----------	80	Mafic Volc. is strongly sericite altered. Many 1-2cm quartz veins and some silicification.	1-2% dissem. py. 62.9 - 63.3 Qtz veins with blebs of sulphide, 10-12% sulphides, 2-3% cpy, 4-5% sphal, 2-3% tet.	
63.40 TO 71.00	ALTERED MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light yellow. Grain Size - fine grained - aphanitic. Finely laminated sericite altered tuff interbedded with chert beds. Occasionally contorted (soft sed. deformation). @ 67m Bedding & foliation ---------- 70.5 - 71.0 a quartz vein with fault clay gouge @ 70.9 - 71.0.	85	Intense sericite alteration and silicification by later quartz veins from 1-5cm.	<10% py> 10% avg. dissem. coarser py.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
71.00 TO 83.50	"SILVER ZONE" (MUDDY TUFF) <MUT+AG Z>	<silver zone> Colour - medium grey. Grain Size - fine grained. Hosted by the muddy tuff (silicified). 72.34 - 74.0 Milky white quartz vein with 5-8% sulphides. Clay fault @ 74.0 77.8 - 30cm fault with rubble. Zones of mainly pyrite with strongly silicified zones 5-10% carrying 50-60% Sphal, Tet, Gal.		Occasional quartz vein. Matrix is siliceous (vein?). Strongly silicified.	71.0 - 72.34 Semi massive, 50% sulphides, 10-20% py, 10% sphal, 15% tet, 2-3% cpy. 72.34 - 74.0 5-8% sulphides in quartz vein, 2% sphal, 3-5% Tet. 74.0 - 75.0 90% sulphides, 10% qtz, 20-25% py, tr-1% cpy, 40% sphal, 15-18% Tet. 75.0 - 77.8 40-50% qtz, 30% py, 20% sphal, 5-10% Tet. 77.8 - 83.5 Strongly silicified. Approx. 50% sulphides, 25-30% py, 10% sphal, 5-6% Tet, 2-3% Galena.	72.34 - 74.0 only 30% recovery
83.50 TO 93.48	"MUDDY TUFF" <MUT>	Colour - light grey Grain size - fine to aphanitic Strong cherty component to the matrix. 40% finely laminated pyrite. Generally laminated with occasional chert fragment. Bedding @ 85m ----------	85	Strongly silicified	Quartz vein 88.4-88.5 Quartz vein with 10% py, tr tet 90.5-91.4 With fault gouge 10% py, 1% tet 91.42-91.52 Te tet 93.0-93.3 89.8-92.0 Silicified zone with 1-2% sphal, tr tet	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5754	62.90	63.30	0.40	0.45	1.08	0.42	34.2	0.10							1.00	0.003	
Averages	71.00	77.80	6.80	1.73	3.46	2.23	1264	2.14						3.06	36.90	0.062	
BCD5755	71.00	72.34	1.34	3.98	2.89	1.13	3850	5.70	2.40	.30				3.08	112.30	0.166	
BCD5756	72.34	74.00	1.66	0.34	0.20	0.12	402	0.22	0.22	0.01				2.71	11.70	0.006	
BCD5757	74.00	75.00	1.00	3.27	10.30	8.50	1860	4.00	1.98	0.26				3.62	54.20	0.117	
BCD5758	75.00	76.50	1.50	0.72	3.21	2.10	230	0.82	0.41	0.05				3.02	6.70	0.024	
BCD5759	76.50	77.80	1.30	1.18	3.24	1.39	435	1.03	0.66	0.09				3.08	12.70	0.030	
BCD5760	77.80	79.30	1.50	0.35	1.40	0.75	151	0.40	0.21	0.02				2.97	4.40	0.012	
BCD5761	79.30	80.80	1.50	0.17	1.28	0.38	80.5	0.39						3.02	2.35	0.011	
BCD5762	80.80	82.30	1.50	0.12	0.47	0.16	80	0.40						3.06	2.30	0.012	
BCD5763	82.30	83.50	1.20	1.03	2.13	2.50	443	0.61	0.57	0.10				3.08	12.90	0.018	

JVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 619.00N
EAST: 9887.60W
ELEV: 1525.90

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 89.90m
START DEPTH: 0.00m
FINAL DEPTH: 89.90m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 4, 1987
DATE COMPLETED: May 5, 1987
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: YES

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
53.30	-	-88° 0'	ACID	OK		-	-	-	-	-	
89.90	-	-84° 0'	ACID	OK		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 6.40	CASING <OB>					
6.40 TO 36.50	ALTERED MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. Finely laminated sericite altered tuffaceous matrix with chert beds & frags. Units often contorted (soft sed. slumping?). Bedding @ 16m ----------	45	Intense sericite alteration in mafics with chlorite alteration to veinlets. - 6.4-11.3 fractures weathered with hematite. - Silicification with many quartz veins & veinlets.	1% dissem. pyrite & occasional pyrite veinlet.	Faults with clay gouge. {23.1 - 23.3} <FLT> {31.5 - 32.0} <FLT> {36.0 - 36.1} <FLT>
36.50 TO 46.00	ALTERED MAFIC TUFF <SERT>	Colour - light green. Grain Size - fine grained. Fine grained mafic tuff strongly sericite altered. Very finely laminated quartz veins: 38.6 - 39.3 39.8 - 43.4. Some slumping + occasional round fragments of chert + pyrite. Bedding parallel to foliation.		Intense sericitic alteration.	Some zones have 40% pyrite. {36.5 - 36.8} <40% py> {39.0 - 39.2} <40% py> the rest has tr - 1% pyrite. Quartz veins @ {38.6-39.3} <30% py, 3% tet, 2% cpy> 30% py, 3% tet, 2% cpy. 39.8-43.4 5% py, tr tet, tr cpy.	Intense fault with clay gouge and quartz chips. {36.9 - 37.8} <FLT> Fault with gouge {42.6 - 42.7} <FLT>
46.00 TO 48.70	"SILVER ZONE" <AG ZONE>	Colour - white - grey. Grain Size - aphanitic - fine grained. Quartz vein with 30-40% sulphides.		Quartz vein with some angular wallrock fragments intensely sericite altered.	46.0 - 47.6 Quartz vein with 5% Tet, tr cpy, 2% py. perhaps white sphalerite. 47.6 - 48.7 Same vein 12% Tet, 2% galena, 8% sphalerite.	
48.70 TO 62.30	CHERT BRECCIA <CHT BX>	Colour - medium grey. Grain Size - aphanitic - fine grained. Light grey chert fragments in a pyritic chert matrix. Occasional anhydrite crystal flooded by early stage silicification. Bedding @ 63m ----------	45	Strongly silicified. Fractures have strong sericite alteration.	<11% tet, 12% sp, 25% py> With silicification comes mineralization. 48.7 - 52.5 Zone averages 11% Tet, 12-14% sphalerite, 25% pyrite. Sometimes sulphides are finely banded. 52.5 - 62.5 Strongly silicified with 30% pyrite	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
					dissem. & pyrite silicification carried tet + sphalerite. Avg. 1-2% Tet, 3-4% Sphalerite, tr cpy. N.B. mineralization continues 30cm into tuff as quartz veins.	
62.30 TO 70.20	MAFIC TUFF WITH CHERT & QUARTZITE? <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. A fine grained sericite altered mafic tuff or ash with coarser quartzite beds + occasional grey chert band. - Very finely laminated. Bedding ----------	45 - 60	Mafic Volcanic sericite altered.	Tr pyrite dissem.	
70.20 TO 80.90	CHERTY "MUDDY TUFF" <MUT>	Colour - medium grey - medium green. Grain Size - fine grained - aphanitic. Dominantly chert 60-70% with some sericite altered mafic tuff (20%) and minor argillite. Fragments angular to subrounded (1-5cm) of chert, argillite and rarely pyrite fragments. Large milky white quartz vein 71.3 - 72.2 with sericite + fuchsite? + talc? Bedding @ 72.3m ----------	45	Mafic Volcanics strongly sericite altered. Silicification around quartz veins.	Avg. 5-10% dissem. pyrite.	Fault Zone with clay + chips. |70.1 - 71.1| <FLT>
80.90 TO 82.50	CHERT WITH MINOR ARGILLITE <CHT+ARG>	Colour - light grey. Grain Size - aphanitic - fine grained. Chert beds with minor argillite. Bedding appears @ ----------	20	Moderately silicified.	5-10% pyrite as laminations + dissem.	Strong fault with graphitic black fault gouge |80.9 - 81.6| <FLT>
82.50 TO 89.92	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. A muddy siltstone, argillite pyritic matrix. Finely laminated with fragments 3mm - 2cm subangular - round of argillite chert + pyrite. - The rock has a very granular texture with		5% quartz veins.	<30-40% py> 30-40% dissem. fine grained pyrite in the matrix.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		quartz grains 1-3mm.				
		Bedding @ 84m ----------	45			
		Bedding @ 89m ----------	45			
97.34 TO 104.76						

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5801	38.60	39.30	0.70	1.19	0.42	0.13	1120	1.23	0.45	0.12				2.96	32.67	0.036	
BCD5802	39.80	41.70	1.90				167	0.22			2100	1850	930				
BCD5803	41.70	43.20	1.50				3.8	0.03			150	18	81				
Average	46.00	50.20	4.20	1.70	4.31	2.44	1405	1.83						2.97	41.00	0.054	
Average	46.00	52.50	6.50	1.34	3.36	1.87	978.5	1.29						2.97	28.50	0.038	
BCD5804	46.00	47.60	1.60	1.12	0.95	0.18	1135	1.26	0.64	0.10				2.70	33.10	0.037	
BCD5805	47.60	48.70	1.10	2.98	4.15	1.94	2800	3.70	1.90	0.24				2.99	81.67	0.108	
BCD5806	48.70	50.20	1.50	1.37	8.02	5.22	670	1.08	0.76	0.10				3.25	19.54	0.032	
BCD5807	50.20	51.70	1.50	0.15	1.26	0.52	50.2	0.02	0.08	0.01				2.96	1.46	0.001	
BCD5808	51.70	52.50	0.80	1.70	2.33	1.42	480	0.85	0.92	0.18				3.01	14.00	0.025	
BCD5809	52.50	54.00	1.50				110	0.24			3700	3300	4020				
BCD5810	54.00	55.50	1.50				20.1	0.17			425	1520	1240				
BCD5811	55.50	57.00	1.50				7.9	0.15			198	1370	620				
BCD5812	57.00	58.50	1.50				25.2	0.15			845	2280	1300				
BCD5813	58.50	60.00	1.50				16.3	0.12			345	2330	2500				
BCD5814	60.00	61.50	1.50				3.9	0.13			78	270	395				
BCD5815	61.50	62.50	1.00				45	0.29			1320	8100	4710				
BCD5816	80.90	81.60	0.70				0.6	0.02			69	170	77				

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 680.30N
EAST: 9757.00W
ELEV: 1601.70

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

COLLAR DIP: -78° 0' 0"
LENGTH OF THE HOLE: 163.68m
START DEPTH: 0.00m
FINAL DEPTH: 163.68m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 5, 1987
DATE COMPLETED: May 7, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: NONE
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
62.80	-	-78° 0'	ACID	OK		-	-	-	-	-	
91.40	-	-80° 0'	ACID	OK		-	-	-	-	-	
127.10	-	-78° 0'	ACID	OK		-	-	-	-	-	
163.70	-	-76° 0'	ACID	OK		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.05	CASING <OB>					
3.05 TO 83.05	MAFIC PYRO-CLASTIC FLOW <MPYRO>	Colour - pale green and dark green. Grain Size - fine grained. Weakly foliated to strong foliation in matrix. - frag. rich - block & lapilli size pale green porphyry nature - silicified amygdules spherical shaped and shardy chloritic flecks within frags, all 1-2mm size - frags flattened at approx. ---------- - dark green ashy matrix, fine grained, well foliated 34.14 first appearance of wormy wandering carb-silica veinlets 5mm carrying 1-2% py. 37.62 - 37.0 Barren milky qtz vein. 47.85 - 50.90 Bad ground 1.1m core loss. 51.0 - 51.35 Rubble Zone 56.60 - 56.85 Quartz vein greyish material 2% py. {57.15 - 57.25} <FLT> Fault gouge & rubble. 57.25 - 64.2 Bad ground 60-80% recovery. 63.93 - 64.0 Quartz vein, 3% py. {64.2 - 64.65} <FLT> Fault gouge & rubble. 66.82 - 66.88 Amygdule rich zone, 30-40% silica filled vesicules in ashy matrix remnant accretionary lapilli. {71.60 - 73.76} <FLT> Gouge 73.76 - 76.30 Bad ground broken core. {76.30 - 77.50} <FLT> Rubbly zone & fault gouge. {81.0 - 81.4} <FLT> As above.	60 60	Fragments attacked by str. carbonate, moderate to strong chlorite is all that remains of ashy matrix numerous 1mm to 1cm carbonate veinlets. 45.0 py 1-2% in matrix & frags.	<1% py> 1% dissem. py.	Some frags have frothy pumaceous look to them. Flow breccia of amygdaloidal flow and ash flow (shard containing) fragments. 53.65 - 58.00 Core out of place marked black.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Gradational Contact				
83.05 TO 93.27	ALTERED MAFIC PYRO-CLASTIC «MPYRO»	Colour - pale yellow & dark green. Fragments become pale yellow as sericite attacks - pervasive carbonate continues. Fragments still distinct however. Contact distinct but ground up.		«ser» 83.05 1st appearance of pale yellow sericite. Gradational increase in sericite in frags downhole. Strong to intense chlorite within matrix carbonate strong.	«1% py» 1% dissem. py 81.24 - 81.28 Quartz - sulphide 2-3% tet, 15 sp.	First stringer.
93.27 TO 97.30	CHERT BRECCIA IN ASH «CHT BX»	Broken chert and siliceous frags with matrix of fine yellow sericite framework >>matrix. 94.0 - 94.5 Quartz veining within chert breccia. 95.25 - 95.3 Lapilli tuff. Contact sharp (bedding) ----------	 55 75	Intense sericite in matrix. Sericite	3-5% py. Tet 1%, py 3%, sp 2-3%, cp 1-2%.	Peculiar jaundice yellow sericite. 94.0 - 95.0 Geochem 5785
97.30 TO 106.20	MAFIC PYRO-CLASTIC & CHERT BRECCIA «MPYRO+» «CHT BX»	Colour - light grey. Grain Size - fine - coarse grained. Fragments of chert broken quartz veins and pumaceous(?) lapilli and block size pyroclastic fragments occur. Contact gradational.		Silicification, pyroclastic frags yellow.	3-5% py.	Transition unit.
106.20 TO 121.94	BLACK CHERTY ARGILLITE AND ASH «ARG+CHT» «+ASH»	Broken and slumped beds of black cherty argillite and ash display soft sediment deformation features. Graphitic component especially on foliation planes. 109.0 - 109.2 116.4 - 117.0 Quartz veins, milky, no sulphides. 117.3 - 117.85		Quartz veining and knotting continues.	107.00 Beautiful massive sulphide fragments occur in various size (v.f.g.py).	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Quartz - graphitic material & chlor. 117.2 - 117.35 Fault Gouge. Contact Sharp ----------	70			
121.94 TO 124.00	ALTERED MAFIC LT & ASH «SERT+ASH»	LT sericitized, moderate - well foliated. Occasional black cherty argillite beds and chert fragments. Contact broken up.		Strong sericite, 3-5%.	«3-5% py» 3-5% pyrite.	
124.00 TO 142.34	CHERT BRECCIA & SULPHIDE MUD MATRIX «CHT BX+» «SUL»	Colour - dull grey & brown. Grain Size - very fine - medium grained. Broken chert beds and fragments display weak foliation in a sulphide matrix. Pyrite definitely bedded and is primary. Quartz - tet-sph stringers are associated with stronger coarser grained pyrite zones. 123.0 - Chert frags in a heavy sulphide mud 30% py. Tet. sp. mineralization associated with 2-5cm cloudy quartz veins. {135.25 - 141.05} «silver zone» "Silver Zone" Massive sulphide laminae and beds sphalerite and tetra also seen conformable. Gradational contact.	55 70	Strong quartz veining and clotting silicification. Si & sericite. Strong silica.	Sulphidic matrix occurs in bands with up to 50% fine py over some sections. {124.85 - 124.91} «SMS» Near Massive sulphide with sp - 1%, tet - trace. 124.91 - 125.5 quartz stringers, sp 3%, tet 5%. Py 10-15% in beds, 2% sp, 1% tet. Contains 2 5cm quartz stringers, 2% tet, 3% sp. 126.6 - 127.90 Quartz injections in sulphidic mud carrying 1-2% tet, 2-3% sp. 127.90 - 128.05 Quartz - sulphide vein, 3-5% tet, 2-3% sph. 50-60% py 5-7% tet, 3-5% sp. 30%-40% py, 2-3% tet, 1-2% sp in 4 5cm quartz stringers. 1-2% tet, 1-2% sp. 1-2% sp, <1% tet, lean zone.	BCD 5786 124.34 - 124.84 NM & stringer. {125.25-125.65} «FLT» Fault Gouge Geochem 5787 131.80 - 133.20 Assay 5788 133.20 - 134.20 Spectacular section of bedded sulphides. BCD 5789 135.25 - 136.25 BCD 5790 136.25 - 137.50 BCD 5791 137.5 - 138.90 BCD 5792

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
					10-12% tet, 5-7% sp, 1-2% ga.	138.9 - 139.82 BCD 5793 139.82 - 140.20 SZ
142.34 TO 145.70	MIXED CHERT BRECCIA WITH SULPHIDE MUD MATRIX AND BLACK CHERTY ARGILLITE <CHT BX+> <SUL+ARG>	Increasing argillite component going downhole minor graphitic component. {145.17 - 145.22} <FLT> Fault gouge. 145.55 - 145.? Fault Zone			<15-20% py, 3-4% tet, 2-3% sp> 15-20% py, 3-4% tet, 2-3% sp quartz stringer.	BCD 5794 144.0 -145.0 Transitional unit.
145.70 TO 149.20	LT WITH SULPHIDIC MUD MATRIC <LT+SUL>	Heterolithic, well sorted, moderate-strong foliation, fragments dominate. Gradational	75		Sulphide fragments 10-20% sulphide py matrix. Sp 5-7%, tet 3-5%, cp 1%.	Correlates with Muddy tuff. BCD 5795 148.2 - 149.20
149.20 TO 154.31	CHERT BRECCIA WITH ARGILLITE & SULPHIDIC MUD MATRIX <CHT BX+> <ARG+SUL>	Broken cherty frags with occasional wisps of black cherty argillite.	70	Numerous quartz veins and knots.		Ultra fine sulphide matrix could represent pyritic ash cloud in water?
154.31 TO 155.79	MASSIVE SULPHIDES <MS>	Entire section, fine and medium grain clots of pyrite.		Local quartz veins & knots.	75-80% py, 5-7% tet?, 1-2% barite, 2-3% sphalerite.	BCD 5796 154.31 - 155.31 BCD 5797 155.31 - 156.31 (diluted) Spectacular! poss. chimneys.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
155.78 TO 156.24	CHERT BRECCIA IN SULPHIDIC MUDDY MATRIX «CHT BX» «SUL»	Contact - sharp.				See BCD 5797
156.24 TO 156.60	MASSIVE SULPHIDE «MS»	Colour - brassy yellow. Grain Size - medium grained. Bedded medium grain py & silica some ultra fine sulphide mud. Contact - faulted.			Py 60-80%, tet 5-7%, sp 5%.	BCD 5798 156.31 - 156.81
156.60 TO 163.68	CHERT BRECCIA AND LT «CHT BX+LT»	Broken fragments of chert beds and silicified tuffaceous unit 25-30% ultra fine sulphide rich, ash or mud forming matrix. Moderate foliation.	50	Abundant quartz veinlets every direction.	Py 15-20%, tet 1-2%, sp tr.	BCD 5799 156.81 - 158.31 Anhydrite. Note change in foliation or bedding after sulphides reflecting primary topography.

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t		COMMENTS
	0.00	0.00	0.00															
BCD5788	133.20	134.20	1.00	0.17	0.32	0.22	80.5	0.68						2.99	2.35	0.020		
BCD5789	135.25	136.25	1.00	1.03	2.51	1.82	288	0.41	0.58	0.18				3.23	8.40	0.012		
BCD5790	136.25	137.50	1.25	0.07	1.04	0.65	46.2	0.20						2.94	1.35	0.006		
BCD5791	137.50	138.90	1.40	0.15	0.60	0.48	59.8	0.36							1.74	0.011		
BCD5792	138.90	139.82	0.92	0.24	0.40	0.40	70.2	0.23							2.05	0.007		
BCD5793	139.82	140.20	0.38	2.30	3.53	2.49	627	0.25	1.20	0.37				3.23	18.29	0.007		
BCD5794	144.00	145.00	1.00	0.30	2.82	1.30	88	0.21	0.23	0.06				3.11	2.57	0.006		
BCD5795	148.20	149.20	1.00	0.06	3.01	1.63	31.6	0.14							0.92	0.004		
BCD5796	154.31	155.31	1.00	0.63	2.14	5.30	251	0.62	0.39	0.18					7.32	0.018	0.32	
BCD5797	155.31	156.31	1.00	0.03	1.50	4.54	48.1	0.36							1.40	0.011	0.62	
BCD5798	156.31	156.81	0.50	0.15	6.30	6.91	138	0.47							4.03	0.014	0.73	
799	156.81	158.31	1.50	0.03	1.32	0.80	37	0.50							1.08	0.015	1.18	

INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 670.20N
EAST: 9909.60W
ELEV: 1529.00

ALTERNATE COORDS GRID: FIELD
NORTH: 6+66N
EAST: 99+ 0W
ELEV: 0.00

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 111.86m
START DEPTH: 0.00m
FINAL DEPTH: 111.86m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 5, 1987
DATE COMPLETED: August 5, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
38.70	-	-49° 0'	ACID	OK		-	-	-	-	-	
105.80	-	-53° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 6.40	CASING <OB>					
6.40 TO 22.20	MAFIC PYRO-CLASTICS <MPYRO>	Colour - light green. Grain Size - fine grained. Lapilli size sub-angular fragments in a chl-sericite altered matrix some chl altered phenos and some vesicular frags. - Rock is strongly fractured.		Matrix chl-sericite altered. Lapilli strongly sericite altered. Many small milky quartz veins. Fractures have hematite + carb. alteration.	<1-2% py> 1-2% dissem py.	40-60% recovery.
22.20 TO 57.00	ALTERED MAFIC TUFF WITH CHERT <SERT+CHT>	Grain Size - fine grained - aphanitic. Finely laminated beds of mafic volcanic tuff with interbeds of chert. Occasionally a chert breccia zone with sub-round chert frags. - Milky white quartz veins 10-30 cm (late stage). Bedding @ 25m = Bedding @ 50m =	 85 80	Mafics intensely altered by sericite. Also strong 30-40% quartz flooding.	2-5% fine grained dissem. py in mafic tuff. Occasional py veinlet.	
57.00 TO 61.70	ARGILLITE <ARG>	Colour - dark grey. Grain Size - fine grained. Finely laminated argilite with pyrite in the matrix + some soft sed. deformation, i.e. slumping.		Occasional milky white quartz vein.	<30% py> Avg. 30% fine grained pyrite as dissem. + laminations.	Weak fault with clay gouge. 60.0 - 60.4.
61.70 TO 67.80	MAFIC TUFF <SERT>	Colour - light brown - light green. Grain Size - very fine grained. - Very fine grained laminated mafic tuff. - Contact with argillite gradational with tuff just a strong volc. component. - Cross bedding common. - Unit also transitional into quartzite. - Occasional angular - sub-angular py fragment. Bedding @ 66.5m =	 70	Mafics strongly sericite altered.	2-3% py dissem. some py frags. occasional 5cm pyrite band in quartz vein.	
67.80 TO 74.50	QUARTZITE <QITE>	Colour - light grey - light brown. Grain Size - medium grained. Gradational contact 1mm quartz grains in a tuffaceous matrix with occasional tuffaceous bands and occasional 2-4mm pyrite frags.		Volcanic matrix sericite altered. Occasional milky white quartz veins 5-20 cm. Vein selvages particularly sericite altered.	2-3% dissem. py occasional py frag. (primary) + some 5-10 cm bands with 60-80% py.	Intense fault with sand + quartz chips. 72.6 - 73.1. {72.6-73.1} <FLT>

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Bedding @ 69m =	80			
74.50 TO 82.10	"SILVER ZONE VEIN" «AG ZONE»	Colour - mottled grey. Grain Size - aphanitic. A mottled milky white quartz vein with fragments of silicified quartzite.		Mafics are extremely sericite altered. Fractures have sericite alteration. Some pink quartz veins, barite?	74.5 - 75.3 Milky white quartz vein with 5% py, 1-2% cpy, 1-2% tet. 75.3 - 82.1 As blebs, veinlets + dissem. particles in quartzite (py + cpy on edges of main vein). Average py-4%, cpy tr, tet 11-12%, gal 4-5%, sph 4-5%.	N.B. Quartzite is the host.
82.10 TO 95.30	QUARTZITE + MAFIC TUFF «QITE+SERT»	colour - light brown. Grain Size - fine grained. Fine grained quartzite with zones of finely laminated altered tuff with frags flattened + rounded. Py frags 1-5 cm. Milky white quartz vein @ 82.1 - 82.3 82.8 - 84.1 92.6 - 92.8 Bedding @ 89m =	85	Mafic tuff intensely sericite altered. 2 stages quartz vein. 1) Oldest grey quartz veins which silicify rock. 2) Youngest large white milky quartz veins.	Avg. 10% fine grained pyrite as frags. and veinlets. 91.75 - 92.8 Quartz veins flooded with 5% py, and 10% grn (fuchsite or talc?).	Two major faults with only fine sand recovered. 87.4 - 88.1. 91.1 - 91.8.
95.30 TO 111.86	"MUDDY TUFF" «MUT»	Colour - light grey. Grain Size - fine grained. Fine grained argillite + siltstone matrix with 30-50% py finely laminated with round to sub-rounded frags .5-3cm of argillite, chert + pyrite. - Loading indicates tops up hole. - Some soft sediment deformation with contortions of the beds. Bedding @ 97m = Bedding @110m =	 60 80	Some silification by quartz veins.	«30-50% py» 30-50% fine grained pyrite in matrix. 2-3% py as fragments.	

.NOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 680.30N
EAST: 9757.00W
ELEV: 1601.70

ALTERNATE COORDS GRID: FIELD
NORTH: 6+75N
EAST: 97+40W
ELEV: 1601.70

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 187.80m
START DEPTH: 0.00m
FINAL DEPTH: 187.80m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 8, 1987
DATE COMPLETED: May 10, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: TO TEST SILVER ZONE

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
60.00	-	-87° 0'	ACID	OK		-	-	-	-	-	
99.60	-	-88° 0'	ACID	OK		-	-	-	-	-	
126.80	-	-87° 0'	ACID	OK		-	-	-	-	-	
178.90	-	-88° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.70	CASING «OB»					
3.70 TO 126.00	MAFIC PYRO-CLASTICS «MPYRO»	Colour - medium green. Grain Size - medium grained. - Lapilli sized fragments in a chl altered matrix. - Lapilli flattened and subrounded with remnant mafic phenos (chl altered). - Occasional tuffaceous unit 1-2mm. Bedding @ 14m ---------- Bedding @ 59m ---------- Bedding @ 99m ---------- 100.0 - 126.0 Alteration increasing with a stronger sericite overprinting as well as increased silicification but lapilli "Ghosts" can be seen, alteration steadily increases down hole!	45 45 45	Matrix is chl altered while lapilli are sericite + carb altered. Quartz veinlets 2-3%.	«2-5% py» Generally 2-5% py dissem. + veinlets. |100.0 - 126.0| «5-8% py, tr cp,tet» Py increase to 5-8% dissem. + veinlets with occasional tr cpy, tet in qtz veinlets. 105.3 - 106.7 Quartz vein with tet tr, cpy tr.	Fault Zone with clay gouge. |47.5 - 48.0| «FLT» with mechanical breccia |54.2 - 57.6| «FLT» broken rock |58.5 - 60.1| «FLT» with broken rock + clay |67.6 - 68.3| «FLT» intense clay alteration.
126.00 TO 187.80	"MUDDY TUFF" «MUT»	Colour - medium grey. Grain Size - fine grained. A fine grained argillite and pyrite matrix with fragments in a slump breccia with frags of argillite, chert + pyrite. - Occasional sericite altered mafic tuff band. Bedding @ 130m ---------- Some intervals have up to 80% syngenetic py. finely laminated. i.e. 136.1 - 137.0 152.1 - 153.0	45	Silicification by quartz veins. Mafics sericite altered.	«50% py» Matrix approx. 50% fine grained pyrite. Note mineralization in silicified zones. 130.2 - 131.7 20% Silicified Zone with 10% Sphal, 8% tet. (Sphal + Tet intergrown). |135.7 - 137.6| «silver zone» Silver Zone "A" 60% silicified zones with 1-2% gal, 70% py, 10-12% sphal, 5-8% tet. N.B. In areas between mineralized bands there are occasional 5cm bands of silicification with minor mineralization. 144.2 - 144.7 Silicified zone, 5% sphal, 4% tet, 30% py. 152.1 - 153.0 80% py, 2% sphal, tr tet.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
					┤153.0 - 154.5├ «silver zone» Silver Zone "B" 60% silicified zone with 8% sphal, 6-8% tet, 3-4% Gal, 40% py.	
					155.9 - 156.4 Silicified zone with 30% coarse py with intergrown 15% sphal, 8-10% tet. 160.3 - 162.5 20% silicified zones with 40% py, 15% sphal, 8% tet. ┤167.0 - 169.1├ «silver zone» Silicified zone 80%. Silver Zone "C" 60% py, 8-10% sphal, 3-4% tet, 3-4% gal 169.1 - 173.4 6% silicified with 30% py, 2% sphal, 1% tet. ┤173.4 - 178.0├«silver zone» 60% silicification. Silver Zone "D" Avg. 40% py, 10% sphal, 3-4% tet, tr galena.	Strong fault with clay gouge. ┤165.1 - 165.5├ «FLT»
		Bedding @ 187.0m----------	40		┤181.2 - 182.4├ «silver zone» 60% silicified. Silver Zone "E" 5% py, 20% sphal, 5-6% tet.	
187.80 TO 249.60						

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	GEOCHEMICAL Sb ppm	As ppm	Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5857	135.70	136.60	0.90	0.08	3.30	2.83	48.5	0.37						3.31	1.41	0.011	
BCD5858	136.60	137.60	1.00	0.08	2.03	1.10	23.8	0.39						3.16	0.69	0.011	
BCD5859	137.60	138.60	1.00				8.1	0.14			290	1420	1260				
BCD5860	144.20	144.70	0.50	0.21	1.14	0.58	36	0.30						2.92	1.05	0.009	
BCD5861	152.10	153.00	0.90	0.01	0.51	0.62	14.1	0.03						3.37	0.41	0.001	
BCD5862	153.00	154.50	1.50	0.59	2.19	2.13	148	0.20						3.18	4.32	0.006	
BCD5863	155.90	156.40	0.50	2.96	5.80	2.65	83	0.21						3.45	2.42	0.006	
BCD5864	160.30	161.30	1.00	0.31	1.19	1.33	79	0.21						3.18	2.30	0.006	
BCD5865	161.30	162.50	1.20	0.06	2.73	3.10	31.7	0.09						3.14	0.92	0.003	
BCD5866	166.10	167.00	0.90				53	0.14			1900	2750	1380				
BCD5867	167.00	168.00	1.00	0.08	1.82	1.19	30.2	0.24						3.14	0.88	0.007	
BCD5868	168.00	169.10	1.10	0.11	4.47	2.17	20.6	0.38						3.56	0.60	0.011	
BCD5869	169.10	170.60	1.50				6.3	0.12			122	6400	1120				
BCD5870	170.60	172.10	1.50				5.6	0.16			110	2400	485				
BCD5871	172.10	173.40	1.30				19.2	0.13			480	1180	2100				
BCD5872	173.40	174.90	1.50	0.10	1.71	1.08	32.4	0.39						3.28	0.95	0.011	
BCD5873	174.90	176.40	1.50	0.02	1.14	0.61	8.7	0.18						3.25	0.25	0.005	
BCD5874	176.40	178.00	1.60	0.06	3.16	1.43	21.9	0.19						3.44	0.64	0.006	
BCD5875	178.00	179.50	1.50				25	0.09			1150	8500	6200				
BCD5876	181.20	182.40	1.20	0.07	3.98	1.08	30.5	0.13						3.06	0.89	0.004	

NNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: RFA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 670.20N
EAST: 9909.60W
ELEV: 1529.00

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

COLLAR DIP: -70° 0' 0"
LENGTH OF THE HOLE: 102.70m
START DEPTH: 0.00m
FINAL DEPTH: 102.70m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
32.80	-	-68° 0'	ACID	OK		-	-	-	-	-	
73.71	-	-68° 0'	ACID	OK		-	-	-	-	-	
101.20	220° 0'	-68° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 0.00 0.00 0.00 TO 3.35	CASING «OB»					
3.35 TO 17.40	MAFIC PYRO-CLASTICS «MPYRO»	Colour - light grey. Grain Size - fine grained. - Lapilli subrounded in a fine grained green matrix. - Subrounded mafic lapilli with remnant mafic phenos and vesicles. Bedding @ 8m ----------	60	- Moderate sericite alteration to lapilli matrix chl altered. - Weathering on fract. to 17.2m - No carb. alteration. - Occasional vuggy milky white quartz vein.	1-2% dissem. py.	
17.40 TO 53.10	MAFIC TUFF WITH CHERT «SERT+CHT»	Colour - light green. Grain Size - very fine grained - aphanitic. - Finely laminated mafic tuff with chert bands and chert fragments. - Beds often highly contorted with soft sed. features. - A chert rich rock. Bedding approx. ----------	45	- Mafic tuff intensely sericite altered. - Some chl altered veinlets. - Some silicification. - Occasional milky white quartz vein.	«5% py» 5% py as laminations + veinlets.	
53.10 TO 58.70	ARGILLITE «ARG»	Colour - medium grey. Grain Size - fine grained. - Well laminated and interbedded with chert. - 56.2 - 58.7 Milky white quartz vein with sulphides, some zones silicified quartzite? Bedding @ ----------	70 - 80	- Some silicification. - Quartz vein has sericite fract. + green mineral (talc, fuchsite?)	«30% py» - Avg. 30% dissem. py in argillite. - Occasional silicified zone with 1-2% sphal. (2-4cm) - 56.2 - 58.7 Quartz vein has sulphide bands. Avg. 1% cpy, 25 tet, tr gal, tr sphal.	Fault gouge with clay {55.90 - 56.0} «FLT» {58.7 - 58.7} «FLT» Fault with sericite gouge.
58.70 TO 73.50	MAFIC TUFF + QUARTZITE «SERT+QITE»	Colour - light brown. Grain Size - fine grained. - Very finely laminated tuff with beds that appear as quartzite. - Zones have round primary py fragments flattened 1-4cm.		- Intense sericite alteration. - 20% milky white quartz veins.	- Averages 10% py in bands. - Milky quartz vein @ 65.7 has blebs of brown sphal.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		- Beds vary from fine grained to very fine grained. - Load casts suggest top up hole. - Bedding varies as low as 25o. Bedding @ ----------	60 - 70			
73.50 TO 78.40	"SILVER ZONE" QUARTZ «AG ZONE»	«qv + sul» Colour - white - light grey. Grain Size - Massive. - Maybe hosted in quartzite because zones of silicified wallrock appear as quartzite? - Sulphides increase as you approach the massive sulphide zone.		Sericite on fract.	73.5 - 77.8 Quartz vein with 6% sulphides as blebs. 2% cpy, 2% brown sphal, 1-2% tet, tr gal. 77.8 - 78.4 Quartz vein contains 40+% Sulphides, 20% sphal, 5% cpy, 12% tet, 2-3% gal. as bands in massive zones + blebs.	
78.40 TO 79.40	MASSIVE SULPHIDES «MS»	Colour - medium brown. Grain Size - fine grained. - Hosted in a cherty muddy tuff. - Sulphides form fine bands. - Zone has been silicified. Bedding @ approx. ----------	60	Silicification.	Avg. 70+% sulphides well laminated in a cherty matrix. Avg. 30% py, 20-25% sphal, 10-15% tet, 1% gal.	
79.40 TO 87.80	"MUDDY TUFF" «MUT»	Colour - medium grey. Grain Size - fine grained. - A strong chert component with a muddy matrix containing 40% fine grained syngenetic py. - Beds often contorted and occasional subrounded chert frag. - Milky white quartz vein 87.0 - 87.3.		Silicification.	«sp, tet, gn» Avg. 20-25% silicified zones with sphal, tet, gal. Avg. over whole inter vals 3-4% sphal, 1-2% tet, tr gal, tr cpy. Milky quartz vein 87.0 - 87.3 has 3-4% galena.	
87.80 TO 101.00	MAFIC TUFF & QUARTZITE «SERT+QITE»	Colour - light green. Grain Size - fine grained - medium grained. Finely laminated mafic tuff interbedded with quartzite with a tuffaceous matrix. - Leucoxene crystals in tuff. Bedding @ ----------	70	- Strong sericite alteration. - Occasional milky quartz vein. - Occasional talc or fuchsite crystal fine grained. - Strong sericite alteration around quartz veins.	«1-2% py» 1-2% dissem. py.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
101.00 TO 102.70	"MUDDY TUFF" «MUT»	Colour - medium grey. Grain Size - fine grained. - More argillite in matrix than upper muddy tuff. - Argillite with pyrite matrix with chert beds + frags. - Beds often disrupted and slumped in soft sed. END OF HOLE		- Moderately silicified with quartz veins. - Occasional talc crystal.	«20-30% py» 20-30% fine grained pyrite in argillite.	-Mod. broken.

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
AVERAGE	56.20	58.70	2.50	0.30	0.82	0.39	296	2.18						2.94	8.63	0.064	
BCD5882	56.20	58.70	2.50	0.30	0.82	0.39	296	2.18	0.12	0.03				2.94	8.63	0.064	
BCD5883	72.00	73.50	1.50				2.6	0.06			62	140	134				
BCD5884	73.50	75.00	1.50	0.10	0.01	0.02	42	0.02						2.65	1.23	0.001	
BCD5885	75.00	76.50	1.50	0.18	0.10	0.01	128	0.10	0.08	0.02				2.70	3.73	0.003	
AVERAGE	76.50	79.40	2.90	0.57	4.27	2.60	398.4	0.59						2.98	11.60	0.017	
AVERAGE	76.50	80.90	4.40	0.49	3.36	2.34	324	0.61						3.00	9.45	0.018	
BCD5886	76.50	77.80	1.30	0.50	0.29	0.27	238	0.23	0.13	0.04				2.73	6.94	0.007	
BCD5887	77.80	78.40	0.60	1.10	4.61	2.98	1020	1.13	0.45	0.09				2.99	29.75	0.033	
BCD5888	78.40	79.40	1.00	0.33	9.25	5.41	234	0.72	0.22	0.02				3.29	6.83	0.021	
BCD5889	79.40	80.90	1.50	0.34	1.62	1.83	180	0.66	0.22	0.02				3.05	5.25	0.019	
BCD5890	80.90	82.40	1.50	0.05	0.12	0.09	20.2	0.30	0.22	0.02				2.84	0.58	0.009	
BCD5891	82.40	83.90	1.50	0.02	0.32	0.53	22.5	0.42						2.89	0.66	0.012	
BCD5892	83.90	85.40	1.50	1.02	1.38	0.59	327	1.51	0.65	0.11				3.01	9.54	0.044	
BCD5893	85.40	86.70	1.30	0.20	0.71	0.89	88.2	0.40	0.16	0.03				3.07	2.57	0.012	
BCD5894	86.70	87.30	0.60	0.80	1.53	1.38	328	0.99	0.49	0.07				3.09	9.57	0.029	

HOLE NUMBER: RG105 | INOVA INC. HOLE RECORD | IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME : SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 670.20N
EAST: 9909.60W
ELEV: 1529.00

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 139.30m
START DEPTH: 0.00m
FINAL DEPTH: 139.30m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 9, 1987
DATE COMPLETED: May 11, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
50.70	-	-85° 0'	ACID	OK	
130.10	-	-87° 0'	ACID	OK	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 0.00 TO 3.70	CASING CASING «OB»					
3.70 TO 17.80	MAFIC PYRO-CLASTICS «MPYRO»	Colour - light green - medium green. Grain Size - fine grained. A fine grained chl altered matrix with irregular lapilli that have remnant vesicles and amygdules + remnant chl altered phenos. Bedding @ 16m ----------	45	Fractures weathered and often have quartz veinlets, matrix chl altered, lapilli sericite altered, some quartz veins have carb. altered selvages.	3-5% py dissem.	
17.80 TO 53.00	ALTERED MAFIC TUFF WITH CHERT «SERT+CHT»	Colour - light green. Grain Size - fine grained - aphanitic. Finely laminated wispy sericite altered mafic tuff with chert beds and subangular fragments ranges from well laminated zones to slump breccias with chert frags + disrupted tuff bands. Bedding @ 19m ---------- Bedding @ 42m ----------	70 60	Mafic tuff intensely sericite altered.	1% dissem. py @ 23.0m. 1cm veinlet with 5% sphal, 2% galena, tr tet. Occasional py stringer. 44.55 - 44.8 Quartz vein with 15% py, 5% sphal, 5-8% tet.	Strong fault 20.42 with 30% recovery as rubbly chips. 20.42 «FLT» Fault zone with clay + quartz.
53.00 TO 63.70	"MUDDY TUFF" «MUT»	Colour - medium grey. Grain Size - fine grained. Contact vague with lots of tuffaceous component to the sediments indicate tops down hole. Unit generallly well laminated with bands of argillite, chert, pyrite + occasional tuff with slump breccias with frags of chert, argillite and pyrite sub-angular. Bedding @ 53.2m ----------	45	Some silicification by quartz veins + sericite alteration to mafic tuff.	«30% py» Approx. 30% fine grained pyrite in the matrix as laminations and fragments. 60.9 - 63.7 Silicified bands carry 5-8% sphal, 3-4% tet, tr galena increases to 63.2 - 63.7 15% sphal, 5% tet in silicified zone near the vein.	Fault Zone 60.4 - 60.6 with rubble
63.70 TO 65.10	QUARTZ VEIN WITH MINERAL-IZATION «QV+SUL»	Colour - medium gray - white. Grain Size - fine grained - aphanitic. Vein ranges in appearance from milky white + massive to mottled with silicified wallrock with sericite alteration on fract, also some of the vein contains a soft pink mineral (Barite?)		Intense silicification with sericite alteration on fract. and some barite?	Sulphides are in veinlets in silicified zone and blebs in the massive vein. Avg. over vein 5% sphal, 4% tet, 5-8% py.	

FROM / TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		N.B. host may be a quartzite or its a vein texture (compare to RG-102, 104).				
65.10 TO 69.80	"MUDDY TUFF" «MUT»	Colour - medium grey. Grain Size - fine grained. Moderately altered rock with a fine grained argillite - pyrite matrix with beds and frags of chert and pyrite chert 50-60%. Quartz vein 68.5 - 69.4 again maybe hosted in a quartzite or it is a mottled texture? Vein has strong sericite selvages + has biotite within it. Bedding @ 66m ----------	40	Strongly silicified and fract. sericite altered.	«30-40% py» Muddy tuff avgs 30-40% fine grained pyrite with occasional bands. 65.1 - 68.5 moderately silicified 3-4% sphal, 1-2% tet, 30+% py. 68.5 - 69.4 Quartz vein 1-2% py, tr sphal, tr tet.	
69.80 TO 72.34	MASSIVE SULPHIDES «MS»	Colour - banded pyrite. Grain Size - fine - medium grained. Very finely laminated sulphides in a cherty matrix with biotite + sericite on foliation. Evidence of loading in sulphides indicating tops up hole + sulphide are syngenetic. Bedding @ 70m ----------	45	Some silicification.	69.8 - 70.7 80-90% banded sulphides, 30% py, 10% tet, tr cpy, 25+% sphal, 9% gal. 70.7 - 72.34 60% sulphides laminated. Avg. 20% py, 9% tet, 2% gal, 23% sphal.	Syngenetic!!
72.34 TO 79.00	CHERT BRECCIA «CHT BX»	Colour - medium grey. Grain Size - aphanitic - fine grained. A silicified chert breccia with vague fragments up to 5cm, minor argillite + sericite on fract. Bedding @ 76.8m ----------	45	Silicified with occasional quartz vein.	72.34 - 76.8 40% sulphides dissem. + banded, avg. 20% py, 15% sphal, 5% tet, tr-1% gal. Occasional quartz vein holds 2-5% galena. 75.3 - 75.6 20% sphal, 5% galena, 3% cpy, 10-12% tet, 10% py. 75.6 - 79.0 Sulphides generally decrease. Avg. 20% zones 10-20cm with 60+% sulphides, 10% py, 4-6% sphal, 2045 tet.	(Maybe a cherty Muddy Tuff?)

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
79.00 TO 122.70	"MUDDY TUFF" «MUT»	Colour - medium grey. Grain Size - fine grained. An argillaceous matrix with 30-40% fine grained pyrite well laminated with occasional fragments of chert, argillite and pyrite, 5%. Occasional "Wispy" band of argillite. Zones have knots of chert + siltstone? Zone becomes more brecciated 92.0 - 122.7. Major fault contact. Bedding @ 90.5m ---------- Bedding @ 117.0m ----------	45 45	Some silicification by quartz veins. Sericite alteration on fract. Occasional bleb of light green transparent mineral (talc?).	«30-40% py» 30-40% fine grained py dissem. py as coarser bands and fine laminations also. 87.4 - 90.5 Zone is silicified near 2 faults. Avg. 25-30% py, 15% sphal, 3-4% tet. "2nd Silver Zone" Otherwise occasional 5cm silicified zone with 5% sphal, 2-3% tet +/-tr cpy.	N.B.Faults @ 87.6 10cm finely broken + ground. 88.8 - 89.0 cave with broken rock. Small fault @ 116.8 - 117.0
122.70 TO 126.50	CHERT BRECCIA «CHT BX»	Colour - light grey. Grain Size - aphanitic. - Large Fault Forms the contact. - A laminated light grey chert with angular fragments to 5cm. Bedding @ 120m ----------	45	Weak sericite on some fract.	Avg. 105 py dissem. + laminated, tr sphal.	- Fault zone with chert frags in a fine grained black argillite - pyrite matrix.
126.50 TO 139.30	"MUDDY TUFF" «MUT»	Colour - medium grey. Grain Size - fine grained. Finely laminated argillite with chert bands and frags rounded 1-4cm of chert, argillite, pyrite seds. occasionally contorted soft sed. slumping. Bedding @ 132m ----------	45	Light soft transparent green mineral on fract. (talc?).	{126.7 - 130.7} «50% py, 10% sph» 50% py, 10% sphal or leucoxene in altered zone with lots of talc? same @ 136.2 - 139.3. Main zones hold 30% fine grained pyrite in argillite material - syngenetic.	Fault Zone @ 126.7 - 130.7 with altered ground area. Fault Zone @ 136.2 - 139.3 vertical fault with gouge (lost rods!). {126.7-130.7} «FLT» {136.2-139.3} «FLT»

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	C	S
BCD5717	44.55	44.80	0.25	0.16	4.42	2.43	42.5	0.20							1.24	0.006		
BCD5818	60.35	60.90	0.55				26	0.20			320	1340	840					
BCD5819	60.90	62.40	1.50	0.17	1.19	0.69	109	0.41	0.13	0.03				2.86	3.18	0.012		
Average	62.40	77.10	14.70	0.43	3.63	2.23	366	0.82						3.03	10.70			
BCD5820	62.40	63.70	1.30	0.67	3.51	1.72	448	1.95	0.46	0.06				2.96	13.07	0.057		
BCD5821	63.70	65.10	1.40	0.17	1.74	0.85	144	0.40	0.14	0.02				2.86	4.20	0.012		
BCD5822	65.10	66.60	1.50	0.25	3.36	1.02	313	0.64	0.16	0.07				3.07	9.13	0.019		
BCD5823	66.60	68.50	1.90	0.07	0.45	0.14	70.5	0.38	0.05	0.04				2.89	2.06	0.011		
BCD5824	68.50	69.80	1.30	0.30	0.26	0.05	364	0.73	0.21	0.03				2.81	10.62	0.021		
BCD5825	69.80	70.70	0.90	1.12	11.95	8.60	1000	1.88	0.62	0.15				2.94	29.17	0.055		
BCD5826	70.70	71.40	0.70	0.14	8.30	5.14	264	0.43	0.11	0.06				3.33	7.70	0.013		
BCD5827	71.40	72.34	0.94	0.18	5.98	4.20	283	0.50	0.14	0.04				3.33	8.25	0.015		
BCD5828	72.34	73.80	1.46	0.03	4.32	2.49	88.4	0.34						3.21	2.58	0.010		
BCD5829	73.80	75.30	1.50	0.08	2.01	1.29	52.5	0.07						3.01	1.53	0.002		
BCD5830	75.30	75.60	0.30	3.18	8.15	9.45	1340	2.75	2.01	0.29				3.27	39.08	0.080		
BCD5831	75.60	77.10	1.50	1.32	4.16	2.58	1040	1.60	0.78	0.15				3.09	30.33	0.047		
BCD5832	77.10	79.00	1.90				19.7	0.29			210	4100	3050					
BCD5833	87.40	88.20	0.80	0.27	6.07	2.52	58.2	0.36						2.94	1.70	0.011		
BCD5834	88.20	89.00	0.80	0.11	1.82	1.25	20.4	0.38						3.50	0.60	0.011		
BCD5835	126.70	128.10	1.40	0.02	0.28	0.24	2.2	0.05						3.11	0.06	0.001		
BCD5836	128.10	130.70	2.60	0.00	0.01	0.03	0.2	0.16						3.05	0.01	0.005		

HOLE NUM. . RG106 | M' DRILL | INC. . RECORD | IMPERIAL UNITS: | .IC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 680.30N
EAST: 9757.00W
ELEV: 1601.70

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

COLLAR DIP: -62° 0' 0"
LENGTH OF THE HOLE: 154.20m
START DEPTH: 0.00m
FINAL DEPTH: 154.20m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 10, 1987
DATE COMPLETED: May 12, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
22.60	-	-62° 0'	ACID	OK		-	-	-	-	-	
53.00	-	-62° 0'	ACID	OK		-	-	-	-	-	
117.30	-	-64° 0'	ACID	OK		-	-	-	-	-	
151.50	-	-68° 0'	ACID	OK		-	-	-	-	-	
153.00	228° 0'	-62° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 0.00 0.00 0.00 TO 3.70	CASING «OB»					
3.70 TO 88.40	MAFIC PYRO CLASTICS «MPYRO»	Colour - medium green Grain Size - fine grained. - A chl altered green matrix with lapilli size flattened fragments with flattened chl altered mafic phenos. Bedding @ 22m ---------- - Fragments rounded to subangular. - Rarely matrix ripped up in the flow breccia. Bedding @ 40m ---------- - Sometimes flow becomes more massive with fine lapilli. - The lapilli are very homogeneous (monolithic). Bedding @ 80m ---------- 85.5 - 88.4 Sericite alteration increases in both lapilli and matrix.	65 70 70	- Matrix is chl altered. Lapilli sericite and carb. altered. - 5% quartz veinlets late stage X-cutting.	Tr py as veinlets.	Mod. fault with broken rock. {64.46 - 67.8} «FLT» {69.5 - 70.1} «FLT» Strong Fault Zone with mech. ground quartz frags + clay. {79.8 - 82.2} «FLT» Wide fault zone with broken rock. {83.6 - 88.9} «FLT»
88.40 TO 100.90	MAFIC TUFF WITH CHERT «SERT+CHT»	Colour - light green - light brown. Grain Size - fine grained. - Generally laminated tuff with chert + silicified bands. - Some lapilli "Ghosts" can be seen so maybe mafic pyroclastics but a strong sediment component. - Some round chert frags. Bedding @ 90m ----------	70	Intense sericite alteration with 50% silicification.	«5% py» 5% dissem. py.	
100.90 TO 115.10	"MUDDY TUFF" «MUT»	Colour - medium grey. Grain Size - fine grained - aphanitic. - A mixture of several rock types chert, argillite + mafic tuff. - Varies from finely laminated chert + argillite with tuffaceous component to beds contorted by soft sed. deformation and argillite frags in slump breccias.		- Mafic tuff sericite altered. - Some silicification by quartz veins. - Occasional quartz vein has a soft pink mineral (barite?). - Approx 10% quartz veins (milky white)	3-5% py as frags (,5cm) and veinlets.	{101.5 - 104.6} «FLT» Fault zone with broken rocks + quartz veins.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Bedding @ 106m ----------	80			
115.10 TO 120.30	MAFIC TUFF WITH CHERT «SERT+CHT»	Colour - light geeen. Grain Size - fine grained - aphanitic. - Well laminated mafic tuff with chert bands and fragments and occas. argillite fragment (rounded). Bedding @ 115.2m ----------	80	- Mafic tuff, intensely sericite altered. - Pyrite veinlets have some chl alteration. - Strongly silicified.	«10% py» 10% py as dissem. and veinlets, tr cpy, tet in a 5cm quartz vein.	Intense fault with fine grained black mud + qtz chips. {117.8 - 118.8} «FLT»
120.30 TO 122.80	QUARTZITE WITH MINERAL-IZATION "SILVER ZONE" «QITE+SUL»	«silver zone» Colour - light grey. Grain Size - medium grained. - A medium grained quartz with equigranular qtz grains with 20-25% sulphides. - Matrix strongly silicified with some milky white quartz veins.		- Silicified matrix. - Fractures have sericite on them.	- 20-25% Sulphides dissem. + blebs 121.70 - 121.78 Well laminated Massive sulphide with sphal, tet, cpy. Avg. over interval: 120.3 - 122.8 1% cpy, 3% sphal (some brown), 1-2% gal, 15-18% tet.	Fault Zone {122.5 - 122.9} «FLT» with ground rock.
122.80 TO 138.30	"MUDDY TUFF" SILVER ZONE «MUT+SUL»	«silver zone» Colour - medium grey. Grain Size - fine grained. - Well laminated argillite, chert and pyrite which is silicified. - Averages 35-40% py bands. - 123.5 - 124.3 Large milky white quartz vein with 10% sulphides. Bedding @ 123m ----------	50	Strongly silicified. 135.1 - 138.3 Some transparent lt. green soft crystals (talc?).	122.8 - 123.5 Strongly silicified, 30% py, 5% sphal, 1% gal, 1-2% tet. 123.5 - 124.3 Milky white quartz vein with coarse blebs of sulphides, 10% cpy, 6% sphal, 1% tet. 124.3 - 135.1 Moderately silicified. 40% py, 3-4% sphal, 1% gal, 2-3% tet in strong silicified bands. 135.1 - 138.3 Intensely silicified with 30% coarse py as blebs, 10% sphal, 1% gal, 3-4% tet.	
138.30 TO 154.20	"MUDDY TUFF" «MUT»	Colour - medium grey. Grain Size - fine grained. - Generally well laminated argillite, chert and minor mafic tuff. - Sometimes bedding is contorted with soft sed. deformation.		- Mafic tuff sericite altered. - 5% milky white quartz veins.	«10% py» - Generally 10% dissem. fine grained pyrite in argillite. - Occasional 2-3cm silicified band with 1-2% sphal, 1-2% tet.	Weak faults @ 144.3 - 144.4 146.4 - 146.8 150.0 - 150.6 with broken rock.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		- Down the section the rock steadily increase in argillite content and becomes more of a breccia with 1cm frags of chert, argillite and pyrite.				
		Bedding & foliation parallel @ 138m ----------	70			
		Bedding & foliation parallel @ 152m ----------	60			

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5901	118.80	120.30	1.50				65	0.14			1000	1250	900				
AVERAGE	120.30	122.80	2.50	1.44	1.51	0.34	1781	2.55						2.92	52.00	0.074	
BCD5902	120.30	121.40	1.10	1.19	0.23	0.04	1490	2.03	0.76	0.10				2.84	43.46	0.059	
BCD5903	121.40	122.80	1.40	1.63	2.51	0.58	2010	2.95	1.00	0.14				2.98	58.63	0.086	
BCD5904	122.80	123.50	0.70	0.09	1.46	0.30	44.3	0.28						2.99	1.29	0.008	
BCD5905	123.50	124.30	0.80	2.68	0.90	0.02	107	0.26						2.73	3.12	0.008	
BCD5906	124.30	125.80	1.50	0.04	0.08	0.16	12.1	0.28						2.87	0.35	0.008	
BCD5907	125.80	127.30	1.50	0.02	0.14	0.11	9.7	0.23						2.86	0.28	0.007	
BCD5908	127.30	128.80	1.50	0.04	0.53	0.29	14.2	0.40						2.99	0.41	0.012	
BCD5909	128.80	130.30	1.50	0.14	0.97	0.64	51.8	0.26						2.98	1.51	0.008	
BCD5910	130.30	131.80	1.50	0.03	0.49	0.35	13.9	0.12						2.96	0.41	0.004	
BCD5911	131.80	133.30	1.50	0.61	1.77	1.16	198	0.22	0.38	0.08				3.03	5.78	0.006	
BCD5912	133.30	135.10	1.80	0.05	0.13	0.12	17.8	0.17						2.87	0.52	0.005	
BCD5913	135.10	136.60	1.50	0.39	2.76	1.14	185	0.21	0.27	0.05				3.16	5.40	0.006	
BCD5914	136.60	138.30	1.70	0.01	1.50	0.40	10.6	0.18						3.05	0.31	0.005	
BCD5915	138.30	139.80	1.50	0.13	0.28	0.21	68	0.23						2.87	1.98	0.007	

NNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: PEA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 580.40N
EAST: 9904.90W
ELEV: 1513.50

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 47.90m
START DEPTH: 0.00m
FINAL DEPTH: 47.90m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
32.60	-	-88° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.35	CASING «OB»					
3.35 TO 11.40	ALTERED MAFIC TUFF WITH CHERT «SERT+CHT»	Colour - light green. Grain Size - fine grained. - Highly broken with 50% milky white quartz veins. - Finely laminated tuff with chert bands. Bedding @ 8.5m ----------	45	Mafic tuff highly sericite altered.	«5-10% py» 5-10% dissem. py	50% recovery
11.40 TO 19.20	QUARTZITE «QITE»	Colour - light grey. Grain Size - medium grained. - Laminated quartzite with 1mm equigranular quartz grains. - Varying amount of mafic tuff in matrix usually weak, occasionally strong. Bedding @ 15m ----------	45	Mafics sericite altered.	«2-3% py» 2-3% dissem. py.	50% recovery
19.20 TO 24.00	"SILVER ZONE" QUARTZ VEIN «AG ZONE»	«qv + sul» Colour - white - black. Grain Size - fine grained. - Quartz vein hosted in the quartzite. - Milky white quartz vein. - Sulphides blebs or massive laminated.		Silicification. Sericite on fractures.	19.2 - 21.5 Milky white quartz vein with 1% Tet. 21.5 - 23.5 Some zones with massive sulphide finely laminated. 50% sphal, 15% cpy, 10% gal, 20% tet. 23.5 - 24.0 Milky quartz vein with tr tet.	40% recovery. Fault Zone with clay gouge. {20.4 - 20.6} «FLT»
24.00 TO 25.60	QUARTZITE «QITE»	Colour - light grey - light green. Grain Size - medium grained. Massive quartzite similar to unit above the "silver zone".		Matrix is sericite altered. A light green mineral throughout the rock (Fuchsite or talc?)	«10% py» 10% py as dissem. + stringers.	
25.60 TO 36.80	CHERT + CHERT BRECCIA «CHT+» «CHT BX»	Colour - light grey. Grain Size - aphanitic. Light grey chert with fine laminations of argillite. Occasionaly pyrite frags. Often brecciated and bedding contorted with soft		Occas. quartz veins.	«1-2% py» 1-2% dissem. pyrite.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		sed features.				
36.80 TO 47.85	"MUDDY TUFF" «MUT»	Colour - medium grey. Grain Size - fine grained. Gradational contact with argillite gradually increasing. A fine grained muddy matrix with 50-60% py fine grained. Rounded - wispy fragments of argillite, chert, pyrite as well as chips of the same. Bedding @ 41.0m ---------- Bedding @ 47.8m ---------- END OF HOLE	 30 45	None	«50% py» 50% pyrite in matrix, fine grained. 5-10% pyrite fragments, pyrite is syngenetic.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5851	19.20	21.50	2.30	0.11	1.91	0.03	76.5	0.21						2.73	2.23	0.006	
BCD5852	21.50	23.50	2.00	4.18	37.40	4.12	2600	2.87						3.79	75.83	0.084	
BCD5853	23.50	24.00	0.50	0.01	0.12	0.02	6.8	0.02						2.81	0.20	0.001	
BCD5854	24.00	25.60	1.60				4	0.03			112	590	250				

HOLE R: RG108

'NOVA INC.
L HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 616.60N
EAST: 9935.50W
ELEV: 1507.60

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

COLLAR DIP: -46° 0' 0"
LENGTH OF THE HOLE: 47.90m
START DEPTH: 0.00m
FINAL DEPTH: 47.90m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 13, 1987
DATE COMPLETED: May 13, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
29.80	-	-50° 0'	ACID	OK		-	-	-	-	-	
47.90	-	-50° 0'	ACID	OK		-	-	-	-	-	
47.00	216° 0'	-51° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 7.00	CASING <OB>					
7.00 TO 23.50	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. - Finely laminated mafic tuff (intense sericite alteration) with interbeds of chert and sometimes subrounded fragments of chert 1-5cm. - Occasional chl alteration tuffaceous lamination. Bedding @ 13m ----------	60	Mafic tuff intensely sericite altered and some silicification. Some chl alteration of tuff. - Weathering on some fractures.	<2-3% py> 2-3% py as veinlets.	50% recovery
23.50 TO 28.20	ARGILLITE <ARG>	Colour - black. Grain Size - very fine grained. - A finely laminated cherty argillite with minor chert bands. Bedding @ 26m ----------	80	- Some silicification by quartz veinlets.	<tr py> Tr - 1% py.	40% recovery
28.20 TO 35.70	QUARTZITE WITH MINOR TUFF <QITE+TUFF>	Colour - light green. Grain Size - fine-medium grained. - Contact with argillite gradational. - Generally a good medium grained quartzite with rounded quartz grains in a siliceous and occasional tuffaceous matrix. - Some units are fine grained with a stronger tuffaceous componoent. Bedding @ 30m ----------	80	Mafic tuff strongly sericite altered. Occasional quartz veins.	<2% py> Tr - 2% py.	40% recovery
35.70 TO 39.20	"SILVER ZONE" QUARTZ VEIN <AG ZONE>	<qv + sul> Colour - white - black. Grain Size - fine grained - massive. - A quartz vein with massive sulphide hosted in the quartzite. - Quartz vein milky white		Silicification (with talc or fuchsite?).	35.7 - 39.0 80+% Sulphides, 2-3% py, 50+% sphal, 25% tet, 5% cpy, 1-2% galena. 39.0 - 39.2 Milky white quartz vein with 1% tet (talc or fuchsite).	205 recovery

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
39.20 TO 47.40	ALTERED MAFIC TUFF WITH QUARTZITE «SERT+QITE»	Colour - light green - light brown. Grain Size - very fine grained. A very fine grained rock probably mainly mafic tuff strongly altered to a massive almost aphanitic rock. - Some bands of altered tuffaceous rock and some fine grained quartzite beds? Bedding? ----------	50	Strong sericite alteration and silicification. - 5% quartz veinlets. - A light green mineral dissem. (fuchsite).	- Tr-1% tet in quartz veinlets. - Avg. 5% py dissem.	
47.40 TO 47.90	CHERT BRECCIA WITH ARGILLITE «CHT BX+» «ARG»	Colour - light grey with black. Grain Size - aphanitic - fine grained. Laminated Chert 70% with argillite bands 30% and angular chips and subrounded 1-3cm fragments of chert. Bedding @ 47.5m ----------	50	Some quartz veinlets.	«40% py» Argillite contains approx. 40% py dissem.	
47.90 TO 48.40						

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	MENTS
BCD5877	34.70	35.70	1.00				0.5	0.03			18	54	10				
BCD5878	35.70	37.00	1.30	13.90	11.95	15.30	33400	25.35	8.65	1.06				4.17	974.17	0.739	
BCD5879	37.00	39.00	2.00	1.42	24.50	5.62	1320	2.76	0.59	0.18				3.50	38.50	0.081	
BCD5880	39.00	39.20	0.20	0.02	0.11	0.06	22.4	0.05						2.87	0.65	0.001	
BCD5881	39.20	40.70	1.50				2.6	0.06			62	140	134				
AVE.	35.70	39.00	3.30	6.34	19.56	9.43	13958	11.66	3.77	0.53	0.00	0.00	0.00		407.10	0.340	

HOLE R: RG109

"NOVA INC.
L HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 680.30N
EAST: 9757.00W
ELEV: 1601.70

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

COLLAR DIP: -46° 0' 0"
LENGTH OF THE HOLE: 148.75m
START DEPTH: 0.00m
FINAL DEPTH: 148.75m

COLLAR GRID AZIMUTH: 180° 0' 0"

COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 10, 1987
DATE COMPLETED: May 12, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING LTD
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: TO DEFINE THE DEPOSIT

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
63.10	-	-47° 0'	ACID	OK		-	-	-	-	-	
97.20	-	-48° 0'	ACID	OK		-	-	-	-	-	
136.90	-	-50° 0'	ACID	OK		-	-	-	-	-	
145.00	231° 0'	-51° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.70	CASING <OB>					
3.70 TO 111.90	MAFIC PYRO-CLASTICS <MPYRO>	Colour - medium green Grain size - fine grained Fine grained chl altered matrix with monolithic lapilli size round fragments. Frags have altered chl mafic phenos and sometimes vesicles Bedding @ 15m ---------- Bedding @ 45m ---------- Bedding @ 70m ---------- 80.0-83.8 More of a massive flow? with only the occasional lapilli 83.8-91.0 Strong flooding by qtz carb veins + sericite alteration increasing 93.6-111.9 Sericite alteration increases steadily	 70 80 75	Matrix chl altered Lapilli sericite and carb altered 5% qtz veinlets + qtz-carb veinlets	<tr py> Tr-1% dissem py 93.6-111.9 py up to 5% dissem 97.1-100 Milky white quartz vein with 3% tet, 3% sph	{29.6-32.8} <FLT> Fault with broken rock and clay gouge with hematite on fract. {95.0-98.1} <FLT> Fault with mechanical breccia with qtz chips {102.3-114.7} <FLT> Broad fault zone with 50% recovery in very broken rock.
111.90 TO 123.40	MAFIC TUFF with CHERT <SERT+CHT>	Colour - light green Grain size - fine grained Contact is in a fault zone with clay gouge. Well laminated mafic tuff and chert with occasional chert frag Milky quartz veins increase 118-123.4 Bedding @ 115m ---------- Bedding @ 120m ----------	 60 80	Mafic tuff stronly sericite altered Strongly silicified 10% milky white quartz veins. Occasional lamination is chl altered	<5% py> Avg 5% dissem. py	
123.40 TO 125.90	"SILVER ZONE" QUARTZ VEIN <AG ZONE>	Colour - light grey Grain Size - aphanitic Milky white quartz vein with quartzite? frags Avgs. 8-10% sulphides		Sericitie and rarely talc? on fract.	8-10% sulphides avg 3-4% in massive quartz vein, 15-20% in fault, 4% sphal, 3% tet, tr-1% cpy, 7-12% py	Strong fault with clay + broken rock 124.1-125.4 Only 50% recovery in fault

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
	<QV>					
125.90 TO 129.60	MAFIC TUFF <SERT>	Colour - light green Grain size - fine grained Fine grained mafic tuff with pyrite beds (syngenetic) 80% up to 15cm wide. Finely laminated beds Bedding @ 128 m ----------	85	Intense sericite alteration	<35% py> Avg 35% py as beds with minor dissem	
129.60 TO 146.30	"SILVER ZONE" QUARTZ VEIN <AG ZONE> <QV>	Colour - milky white Grain size - aphanitic Large milky white quartz vein with variou textures 137.2-138.1 Mafic tuff - sericite altered well laminated Bedding + Foliation @ 137.5 ---------- 138.1-142.0 Vein has sericite tuff frags, and frags of silicified quartzite?	85	129.6-133.0 5% light green mineral 133.7-137.2 Light green mineral, 3-5% in milky quartz vein and light orange mineral 1%	129.6-133.0 5% dissem. py, tr cpy, tr tet 133.0-133.7 80% sulphides laminated, 40% py, 15% sphal, 20% tet, 2-3% gal 133.7-137.2 8% sulphides as blebs + dissem, 3% py, 2-3% cpy as coarse blebs (1-2cm), 1% tet, tr sphal, gal 137.2-138.1 8% dissem. py 138.1-142.0 Avg approx. 10% sulphides, 4% dissem. py, 2% cpy blebs, 2% sphal dark brown blebs to 4cm, 2% galena to 3cm blebs, tr tet 142.0-142.7 30% sulphides laminated, 5% py, 10-12% sphal, 12% tet, 2% cpy, 1% gal 142.7-146.2 10% sulphides, fine grained dissem. + laminated, 6% py, 2% sphal, 1% cpy,	{130.2-134.11} <FLT> Strong fault zone with clay

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
					1% tet	
146.30 TO 148.80	MAFIC TUFF <SERT>	Colour - light green Grain size - fine grained Finely laminated mafic tuff with bands of chert and pyrite Bedding ----------	80	Mafic tuff intensely sericite altered 30% quartz veins milky white.	6-8% dissem. py	

MINNOVA INC.

HOLE : RG110 — D OLE RECORD — IMPERIAL UNITS: — METRIC UNITS: X

PROJECT NAME: SAM	PLOTTING COORDS GRID: SURVEY	ALTERNATE COORDS GRID:	COLLAR DIP: -90° 0' 0"
PROJECT NUMBER: 333	NORTH: 616.50N	NORTH: 0+ 0	LENGTH OF THE HOLE: 66.10m
CLAIM NUMBER: REA 1	EAST: 9935.50W	EAST: 0+ 0	START DEPTH: 0.00m
LOCATION: SAMATOSUM	ELEV: 1507.60	ELEV: 0.00	FINAL DEPTH: 66.10m

COLLAR GRID AZIMUTH: 180° 0' 0" — COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 13, 1987	COLLAR SURVEY: YES	PULSE EM SURVEY: NO	CONTRACTOR: G & D DRILLING
DATE COMPLETED: May 14, 1987	MULTISHOT SURVEY: NO	PLUGGED: NO	CASING: PULLED
DATE LOGGED: 0, 0	RQD LOG: YES	HOLE SIZE: NO	CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
31.09	-	-87° 0'	ACID	OK		-	-	-	-	-	
66.00	-	-86° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 0.00 TO TO 6.10	CASING CASING <OB>					
6.10 TO 22.70	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained-aphanitic. - Finely laminated mafic tuff with chert beds and fragments. - Occasional 1-2cm rounded chert fragment. Bedding @ 13m ----------	45	- Tuff is intensely sericite altered. - Some silicification by quartz veinlets. - Some chl alteration with py veinlets.	<10% py> Avg. 10% py as veinlets with minor dissem. py.	Fault with sericite + clay gouge. {22.6 - 22.7} <FLT>
22.70 TO 28.30	ARGILLITE WITH QUARTZITE <ARG+QITE>	Colour - medium grey. Grain Size - fine-medium grained. Top is a fault contact unit is finely laminated argillite with quartzite units. Bedding @ 24m ----------	40	Some silicification by quartz veins.	<1-2% py> 1-2% dissem. py	N.B. Argillite is not conductive.
28.30 TO 30.20	QUARTZITE <QITE>	Colour - light grey. Grain Size - medium grained. - Gradational contacts into argillite. - Equigranular quartz grains (1mm) in an argillite matrix. Bedding @ 30m ----------	45	- N/A - - Some quartz veinlets.	<5% py> 5% dissem. py.	
30.20 TO 32.00	ARGILLITE WITH QUARTZITE <ARG+QITE>	Colour - medium grey - black. Grain Size - fine grained. - Again gradational contacts with quartzite. - Finely laminated argillite with quartzite beds with an argillite matrix. Bedding @ 31m ----------	45	- Some quartz veinlets.		N.B. Some argillite is weakly conductive.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
32.00 TO 41.40	QUARTZITE WITH MAFIC TUFF <QITE+SERT>	Colour - light brown. Grain Size - medium grained. - Finely laminated quartzite with 1mm equigranular quartz grains. - Matrix contains sericite altered mafic tuff which steadily increases down the unit. - Frequent 2-3mm frags? of pyrite. Bedding @ 45m ----------	45	- Mafic tuff strongly sericite altered. - 5% milky white quartz veins.	- 5% dissem. py. - Occasional py band, 80% py, 5cm. - Occasional milky quartz vein has tr tet.	
41.40 TO 45.10	"SILVER ZONE" QUARTZ VEIN <AG ZONE>	<qv + sul> Colour - milky white. Grain Size - aphanitic. - Massive milky white quartz vein with 15-18% sulphides as blebs. - Occasional strongly sericite altered wallrock frag + some zones appear to be silicified quartzite.	–	- Sericite alteration on fract.	15-18% Sulphides as coarse up to 3cm blebs & dissem. Avg. 2% py, 8% cpy, 3-4% sphal, 2-3% tet, tr gal.	
45.10 TO 48.40	MAFIC TUFF WITH QUARTZITE <SERT+QITE>	Colour - light green. Grain Size - fine-medium grained. Beds of altered mafic tuff mixed with quartzite (equigranular) with thin beds of frags of 80% py. - Pyrite frags rounded to 3cm. Bedding @ 47.6m ----------	45	- Strong sericite alteration. - Occasional quartz veinlet.	- 2-3% dissem. - Occasional py bed up to 5cm with 80% py.	
48.40 TO 51.00	"SILVER ZONE" QUARTZ VEIN <AG ZONE>	<qv + sul> Colour - milky white. Grain Size - aphanitic. - 80% quartz vein hosted in mafic tuff + quartzite. - Vein has zones that appear mottled (silicified quartzite). - Some vuggy patches in vein (appear as frags).		Some sericite on fract. and light green mineral (talc?).	- 7-9% Sulphides ad dissem. + veinlets. - Sulphides decrease @ bottom 40% of vein. Avg. 2-3% cpy, 1-2% tet, 1-2% gal, 2% sphal.	
51.00 TO 58.80	MAFIC TUFF WITH QUARTZITE <SERT+QITE>	Colour - medium green. Grain Size - fine grained. - Finely laminated mafic tuff with beds of quartzite with a tuffaceous matrix. Bedding @ 55.2m ----------	50	- Intense sericite alteration to mafic tuff. - Quartz veins (milky white) 20%. - Fault Zone 56.8 - 58.8 is silicified and has a	Avg. 5-9% py dissem. + stringer.	Strong fault zone 56.8 - 61.8 with broken rock 50% recovery and alteration with quartz veins. {56.8-61.8} <FLT>

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
				light green mineral.		
58.80 TO 66.10	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. An argillite-pyritic matrix contains rounded fragment .5 - 3cm of argillite, chert and pyrite in a slump breccia. Bedding @ 63m ----------	45	Some silicification, 10% quartz veins.	<50% py> - Matrix contains 50% fine grained syngenetic pyrite.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	MENTS
BCD5916	39.90	41.40	1.50				2.2	0.04			27	56	22				
AVERAGE	41.40	43.80	2.40	0.50	1.24	0.52	205.5	0.82						2.72	5.99	0.024	
BCD5917	41.40	42.60	1.20	0.31	1.12	0.22	220	0.74						2.67	6.42	0.022	
BCD5918	42.60	43.80	1.20	0.69	1.37	0.82	191	0.89						2.76	5.57	0.026	
BCD5919	43.80	45.10	1.30	0.33	0.21	0.22	109.5	0.35						2.78	3.19	0.010	
BCD5920	45.10	46.60	1.50				1.7	0.12			25	34	136				
BCD5921	46.60	48.40	1.80				4	0.15			99	200	60				
BCD5922	48.40	49.90	1.50	0.26	0.51	0.39	43.8	0.52						2.72	1.28	0.015	
BCD5923	49.90	51.00	1.10	0.03	0.42	0.02	6.1	0.19						2.84	0.18	0.006	
BCD5924	51.00	52.50	1.50				2	0.13			74	78	12				
BCD5925	56.80	58.80	2.00				1.4	0.04			46	130	10				

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 672.50N
EAST: 9952.00W
ELEV: 1508.80

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

COLLAR DIP: -80° 0' 0"
LENGTH OF THE HOLE: 103.90m
START DEPTH: 0.00m
FINAL DEPTH: 103.90m

COLLAR GRID AZIMUTH: 135° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 180° 0' 0"

DATE STARTED: May 13, 1987
DATE COMPLETED: May 15, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.48	-	-80° 0'	ACID	OK		-	-	-	-	-	
60.65	-	-77° 0'	ACID	OK		-	-	-	-	-	
87.48	-	-78° 0'	ACID	OK		-	-	-	-	-	
104.55	-	-79° 0'	ACID	OK		-	-	-	-	-	
104.20	178° 0'	-80° 0'	TRO-PARI	OK		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 6.10	CASING <OB>					
6.10 TO 31.00	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained to aphanitic. - Fine grained well laminated mafic tuff with interbeds of chert and chert frags (rounded 5mm - 2cm). - Occasionally matrix has an argillite component i.e. 20.4 - 21.2 Bedding @ 12m ----------	60	- Strong hematite weath. on fract. 6.1 - 19.4. - 10% milky white quartz veins. - Large milky quartz vein 28.9 - 29.9 - Mafic tuff strongly sericite altered.	<1-2% py> 1-2% dissem. py with occasional py veinlet.	Fault with gouge + clay 29.9 - 30.0m {29.9-30.0} <FLT>
31.00 TO 41.50	PYRITIC MUDSTONE <PY MUD> <PY MUD> PYRITIC MUDSTONE	Colour - medium grey - brown. Grain Size - fine grained. Grain Size - fine grained. - A mudstone with 40-60% fine grained pyrite in - Occasional argillite band with only 1-2% py. - Ang. frags of argillite + chert 3-15mm. Bedding @ 37m ---------- Colour - medium grey - brown. Grain Size - fine grained. - A mudstone with 40-60% fine grained pyrite in	70			
41.50 TO 54.60	MAFIC TUFF WITH QUARTZITE <SERT+QITE>	Colour - light green. Grain Size - fine - medium grained. - Well laminated fine grained mafic tuff. - Some beds of quartzite with 1-2mm equigranular quartz grains. - Mafic tuff has round pyrite frags 1-2cm. Bedding @ 45m ----------	45	- Mafic tuff intensely sericite altered. - 15% milky white quartz veins.	<5% py> - Avg. 5% py as frags + knots. - 45.1 - 46.1 A milky quartz vein with zones of silicified quartzite contains 5% py and tr-1% tet as blebs + fine grained. dissem.	Fault with clay gouge 42.1 - 42.3m. {42.1-42.3} <FLT>

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
54.60 TO 70.40	"SILVER ZONE" QUARTZ VEIN <AG ZONE> <QV>	Colour - milky white. Grain Size - aphanitic. - A large milky white quartz vein with zones of silicified quartzite. - Vuggy zones in the vein. - Some zones have quartz breccia with angular frags.		- Silicification with sericite on vein fract. - Talc or a light green mineral on fract. - Quartzite silicified.	<1% py,5% tet,tr-1% gn,1% sp,3% cp> Zone avgs. 1% py, 5-6% tet as veinlets + blebs, tr-1% gal. as blebs, 1% sphal lt., 2-3% cpy as coarse blebs 1-2cm. 54.6 - 60.2 relatively barren. 60.2 - 68.8 High grade portion with zones of 20% tet. 68.8 - 70.0 Massive Sulphides well laminated (equiv. to RG-105).	Strong fault with rock chips 1-2mm {58.8 - 58.9} <FLT> {54.6 - 57.6} <FLT> have only 60% recovery, strong fault with gouge.
70.40 TO 85.40	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. - A muddy fine grained pyritic matrix, 40% py with beds of chert + frags of chert, argillite and pyrite (slump breccia). Bedding @ 74.6m ----------	60	- Some silicification.	<40% py> 40% fine grained py (syngenetic), tr sphal in silicified veinlets. 80.4 - 84.2 25% silicified zones with 10% sphal as blebs + veinlets, 2-3% galena, 2% tet, tr cpy.	Strong fault zone with clay gouge {70.4 - 72.5} <FLT>
85.40 TO 97.20	ARGILLITE <ARG>	Colour - black. Grain Size - fine grained. Well laminated argillite with occasional 20cm pyrite bed (80% Py). N.B. some crossbedding indicates tops downhole. Bedding @ 92m ----------	45	10% Quartz veins.	<5% py> Avg. 5% dissem. py in argillite. 80% py in beds (40cm total).	Strong fault with clay gouge 95.6 - 96.6 with a quartz vein. {95.6-96.6} <FLT>
97.20 TO 103.90	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. 97.2 99.2 Dominantly mafic tuff + chert but grades into a py-arg. matrix with beds of mafic tuff, chert and frags of chert and py. Bedding @ ----------	45 - 60	Some silicification.	<10-15% py> Avg. 10-15% dissem. py.	Strong fault with clay gouge {98.4 - 98.6} <FLT> Large Fault zone 102.5 -

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	MENTS
BCD5201	45.10	46.10	1.00	0.01	0.02	0.01	2.5	0.01	0.02	0.01				2.79	0.07	0.001	
BCD5202	53.10	54.60	1.50				12.4	0.05			198	44	42				
BCD5203	54.60	56.10	1.50	0.02	0.01	0.01	10.2	0.01	0.01	0.01				2.75	0.30	0.001	
BCD5204	56.10	57.60	1.50	0.03	0.01	0.01	15.8	0.01	0.02	0.01				2.75	0.46	0.001	
BCD5205	57.60	59.10	1.50	0.09	0.02	0.04	120	0.15	0.06	0.01				2.81	3.50	0.004	
AVERAGE	59.10	70.40	11.30	0.64	1.11	0.39	599.2	0.89						2.82	17.50	0.026	
BCD5206	59.10	60.60	1.50	0.71	1.68	0.12	715	1.18	0.27	0.10				2.82	20.85	0.034	
BCD5207	60.60	62.10	1.50	0.24	0.27	0.04	252	0.23	0.11	0.03				2.78	7.35	0.007	
BCD5208	62.10	63.60	1.50	0.55	0.40	0.02	187	0.18	0.07	0.01				2.73	5.45	0.005	
BCD5209	63.60	65.10	1.50	0.72	0.86	0.64	590	0.58	0.19	0.02				2.92	17.21	0.017	
BCD5210	65.10	66.60	1.50	0.60	1.34	0.59	660	1.00	0.26	0.02				2.87	19.25	0.029	
BCD5211	66.60	68.10	1.50	0.54	0.36	0.04	650	1.01	0.22	0.07				2.76	18.96	0.029	
BCD5212	68.10	69.60	1.50	1.37	0.76	0.06	1280	1.90	0.44	0.11				2.78	37.33	0.055	
BCD5213	69.60	70.40	0.80	0.23	5.10	2.68	337	1.21	0.10	0.04				2.99	9.83	0.035	
BCD5214	70.40	71.90	1.50				5.2	0.26			225	2100	1320				
BCD5215	80.40	81.90	1.50	0.19	1.82	0.76	42.8	0.22	0.09	0.04				3.01	1.25	0.006	
BCD5216	81.90	83.10	1.20	0.06	0.26	0.18	16.3	0.24	0.03	0.01				2.96	0.48	0.007	
BCD5217	83.10	84.20	1.10	0.14	2.51	0.58	57	0.23	0.06	0.02				3.07	1.66	0.007	
BCD5218	84.20	85.30	1.10														

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 695.10N
EAST: 9738.70W
ELEV: 1617.10

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

COLLAR DIP: -58° 0' 0"
LENGTH OF THE HOLE: 166.72m
START DEPTH: 0.00m
FINAL DEPTH: 166.72m

COLLAR GRID AZIMUTH: 164° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 209° 0' 0"

DATE STARTED: May 16, 1987
DATE COMPLETED: May 18, 1987
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: YES

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
78.33	-	-56° 0'	ACID	OK		-	-	-	-	-	
122.89	-	-56° 0'	ACID	OK		-	-	-	-	-	
161.00	206° 0'	-54° 0'	TRO-PARI	OK		-	-	-	-	-	
161.01	0° 0'	-54° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.00	CASING <OB>					
3.00 TO 133.80	MAFIC PYRO-CLASTICS <MPYRO>	Colour - medium green. Grain Size - fine grained. - Chl rich matrix with lapilli sized frags. - Lapilli monolithic with chl altered remnant mafic phenos. Bedding @ 23m ---------- - 28.7 - 31.0 Massive flow or tuff. Bedding @ 57.5m ---------- Bedding @ 86.0m---------- 112.1 - 138.8 Sericite alteration increases with 10% qtz-carb veinlets.	80 80 90	- Matrix chl altered - Lapilli sericite + carb. altered. - Weathering on fract. 3.0 - 14.5 5% qtz-carb veins + veinlets.	<1-2% py> Generally 1-2% dissem. py. {121.3 - 133.8} <10-15% py> Py increases as dissem. + veinlets 10-15% 126.6 - 127.1 Quartz vein with 5% dissem. py with carb. 10% brown sphal as blebs, 3% galena, 1% tet.	{78.2-78.7} <FLT> Mod. fault zone 78.2-78.7 with broken rock + some clay. Mod. faults @ 108.8 - 109.0 110.2 - 110.5 with broken rock + clay. Mod. fault with broken rock. {123.9 - 125.5} <FLT> {108.8-109.0} <FLT>
133.80 TO 142.20	"MUDDY TUFF" <MUT>	Colour - light black. Grain Size - fine grained. - Dominantly argillite breccia with argillite, py and chert in a slump breccia. Laminations highly contorted with soft sed. deformation. - 136.5 - 138.6 A mafic tuff rich zone. - Some mafic tuff in the matrix of the muddy tuff. Bedding @ 139m ----------	75	Quartz veinlets.	<5% py> 5% py.	Strong faults with clay gouge @ {133.8 - 134.9} <FLT> {136.9 - 137.2} <FLT> {141.2 - 141.7} <FLT> Intense clay altered fault starts @ 142.2 - cont'd.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
142.20 TO 156.10	MAJOR FAULT ZONE. <FLT>	Colour - light grey. Grain Size - fine grained. - Major shear zone with dominantly "Muddy Tuff". Quartz veins and mineralization as chips in a clay matrix. - A mechanical breccia. - Chips consist of argillite, mafic tuff, chert, pyrite, quartz vein.		- Clay is composed mainly of sericite. - 30+% quartz veins. 144.4 - 148.5 Sericite alteration + occasional light green mineral (talc?).	142.2 - 144.4 Argillite + mafic tuff with 2-3% py. 144.4 - 148.5 Qtz vein with mottled "quartzite" text 1-2% lt sphal, 1% galena, approx. 10% tet as dissem. + blebs, some vein breccia. 148.5 - 148.9 Zone of laminated sulphides @ 45o to axis, 10% lt brown sphal, 20-25% tet. 148.9 - 156.1 Silicified muddy tuff, 30+% py, 2-3% lt brown sphal, 1-2% tet, tr cpy + gal.	
156.10 TO 166.70	"MUDDY TUFF" <MUT>	Colour - light grey. Grain Size - fine grained. A well laminated cherty muddy tuff with some flattened chert frags in a pyritic matrix. Bedding @ 157m ---------- Bedding @ 166m ----------	 80 70	Moderately silicified.	<30% py> 156.1 - 163.7 Silicified muddy tuff with 30% fine grained syng. py, 2-3% lt brown sphal, 1-2% tet, tr gal. 158.0 - 158.3 Zone has 2-3% cpy. 163.7 - 165.7 15-20% fine grained syng. py. -	Faults with clay gouge @ 160.9 - 161.3 <FLT> 163.3 - 164.3 <FLT> 165.3 - 166.4 + broken rock.

To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
127.10	0.50	0.12	2.16	1.63	11.8	0.04						2.98	0.34	0.001	
144.40	1.50				6.9	0.01			74	146	52				
149.90	4.50	1.43	1.46	0.45	1553	1.91						2.73	45.30	0.056	
151.90	7.50	1.01	2.16	1.06	1063	1.43						2.78	31.00	0.042	
145.90	1.50	1.40	0.46	0.02	1490	2.23	0.91	0.12				2.69	43.46	0.065	
147.40	1.50	1.43	1.31	0.20	1580	1.96	0.94	0.10				2.72	46.08	0.054	
148.50	1.10	1.32	1.10	0.30	1445	1.60	0.88	0.12				2.70	42.15	0.047	
148.90	0.40	1.82	6.78	3.37	1990	1.72	1.20	0.16				2.99	58.04	0.050	
150.40	1.50	0.49	3.84	2.50	442	0.38	0.28	0.06				2.89	12.89	0.026	
151.90	1.50	0.28	2.56	1.45	211	0.55	0.15	0.02				2.84	6.15	0.016	
153.40	1.50	0.15	1.42	0.63	118.5	0.42	0.09	0.02				2.82	3.46	0.012	
154.90	1.50	0.04	0.57	0.33	24.24	0.37						2.81	0.71	0.011	
156.10	1.20	0.17	3.79	2.12	209.5	0.64						2.96	6.11	0.019	
156.10	1.20	0.17	3.79	2.12	209.5	0.64	0.10	0.03				2.96	6.11	0.019	
157.60	1.50	0.05	1.10	0.54	36	0.43						2.94	1.05	0.013	
159.10	1.50	0.47	1.00	0.62	184.5	0.68						2.94	5.38	0.020	
159.10	1.50	0.47	1.00	0.62	184.5	0.68	0.18	0.06				2.94	5.38	0.020	
160.60	1.50	0.04	0.93	0.41	34	0.42						2.92	0.99	0.012	
162.10	1.50	0.06	3.00	1.92	89.5	0.46						3.07	2.61	0.013	
163.70	1.60	0.29	0.84	0.39	65.4	0.48						2.89	1.91	0.014	
165.20	1.50				11.8	0.18			156	220	335				

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 631.60N
EAST: 9974.10W
ELEV: 1500.30

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 72.20m
START DEPTH: 0.00m
FINAL DEPTH: 72.20m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
40.20	-	-90° 0'	ACID	OK		-	-	-	-	-	
72.24	-	-89° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 18.20	CASING <OB>					
18.30 TO 20.90	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. Finely laminated mafic tuff with chert frags 1-2cm subrounded. - N.B. loading suggests tops downhole. Bedding @ 18.6m ----------	45	Mafic tuff sericite altered. Some silicification by quartz veins.	<10% py> Avgs. 10% dissem. py in quartz veins.	
20.90 TO 34.50	ARGILLITE + QUARTZITE <ARG+QITE>	Colour - light grey. Grain Size - fine-medium grained. - Finely laminated argillite beds interbedded with medium grained coarse-massive quartzite beds. - Occasional syng. py bed and round pyrite frags. - Quartzite equigranular qtz grains with chips of argillite and larger qtz grains. Bedding @ 24.8 ---------- Foliation parallel to bedding.	45	24.1 - 24.6 Bull milky white quartz vein.	8% py beds + frags (fine grained syngenetic).	N.B. Some graphite in the argillite that is weakly conductive.
34.50 TO 58.50	MAFIC TUFF + QUARTZITE <SERT+QITE>	Colour - light green. Grain Size - fine-medium grained. Finely laminated mafic tuff with massive beds of quartzite with equigranular quartz grained and occasional argillite chip. - 50% late stage milky quartz veins with mineralization. - Some round syngenetic pyrite frags, and occasional py bed.		Mafic tuff sericite altered. Some frags in the quartz vein appears to be silicified quartzite. - a pink mineral (barite?) in quartz vein 49.5 - 50.0	Avg. 10% dissem. py with beds of 80% py. Quartz veins contain blebs of mineralization, 1% blackjack sphal, 1% tet, tr gal. {36.7-55.0} <qv+ 1% sph, 1% tet,tr gn>	Strong fault zone with clay + mechanical breccia + quartz veins. {54.2 - 60.1} <FLT>
58.50 TO 72.20	MUDDY TUFF <MUT>	Colour - medium grey. Grain Size - fine grained. - Contact is a strong fault zone. - An argillite-pyritic matrix finely laminated with frags .5-5cm of chert, argillite and pyrite		{58.5 - 59.8} <FLT> in fault zone clay quartz veins + light green mineral (talc?). Quartz veins around clay altered fault	<30-40% py> 30-40% fine grained syngenetic py as beds of frags 64.3 - 64.6.	Fault zone with clay gouge.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		(a slump breccia).		63.9 - 64.3.		
		Bedding @ 60.3m ----------	45			
		Bedding @ 73.0m----------	30			

				ASSAYS							GEOCHEMICAL							COMMENTS
ample	From (m)	To (m)	Length (m)	Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t		
)5968	36.40	37.90	1.50	0.03	0.10	0.01	24.6	0.34						2.92	0.72	0.010		
)5969	37.90	39.40	1.50	0.08	0.50	0.01	102	0.21						2.78	2.98	0.006		
)5970	39.40	40.90	1.50	0.01	0.02	0.01	12	0.02						2.73	0.35	0.001		
)5971	40.90	42.40	1.50				4.3	0.07			42	43	41					
)5972	42.40	43.90	1.50				7.1	0.08			57	3720	750					
)5973	43.90	45.40	1.50	0.02	0.03	0.01	14.3	0.05						2.94	0.42	0.001		
)5974	45.40	46.90	1.50	0.01	0.02	0.12	14.2	0.01						2.81	0.41	0.001		
)5975	46.90	48.40	1.50	0.02	0.84	0.04	14.3	0.01						2.82	0.42	0.001		
)5976	48.40	49.90	1.50	0.01	0.02	0.01	5.4	0.04						2.94	0.16	0.001		
)5977	49.90	51.40	1.50	0.01	0.15	0.03	6.6	0.04						2.86	0.19	0.001		
)5978	51.40	52.90	1.50	0.01	0.05	0.07	2.2	0.02						3.09	0.06	0.001		
)5979	52.90	54.40	1.50	0.01	0.11	0.05	4.1	0.07						2.92	0.12	0.002		
)5980	54.40	55.90	1.50	0.03	0.30	0.09	9.8	0.10						2.87	0.29	0.003		
)5981	58.50	59.80	1.30				2.3	0.03			45	320	40					

PROJECT NAME: SAM
PROJECT NUMBER: SAM
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 600.00N
EAST: 9975.80W
ELEV: 1491.60

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 41.80m
START DEPTH: 0.00m
FINAL DEPTH: 41.80m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 18, 1987
DATE COMPLETED: May 19, 1987
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: YES

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
41.80	-	-86° 0'	ACID	OK		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 15.50	CASING <OB>					
15.50 TO 18.40	QUARTZITE <QITE>	Colour - grey. Grain Size - fine grained. Granular quartz in sericitic matrix becoming increasingly sericitic downhole.		Moderate sericite becoming strong downhole.	2% py.	50% recovery
18.40 TO 22.40	QUARTZ VEIN (MINERAL-IZED) <QV+SUL>	Colour - white Grain Size - aphanitic. Badly broken up quartz vein with wallrock inclusions and sulphides.		Local green mica.	<3% sp, 2% gn, 1% tet> Pods of sphalerite (blackjack) with galena and tetrahedrite mainly in first 2m. (3% sp, 2% gn, 1% tet).	40% recovery
22.40 TO 23.50	SERICITIC					
TO 23.35	TUFF	Colour - greeny grey. Grain Size - fine grained.		Moderate sericite.	5% py.	
TO 23.50						
23.35		Sericitic mafic tuff with quartz knots.				
23.50	<SERT>					
23.50 TO 29.00	"MUDDY TUFF" <MUR>	Colour - grey. Grain Size - fine grained. Initially very gougey with core angles close to axis ---------- Then becomes slightly cherty (silica flooded) until 28.5 where it is gougey again. @ 27.5m ----------	20 60	Intense clay/sericite. Chertiness probably silica flooding.	<5% py> 5% py throughout. 1% tet-sp in silica flooded zone.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
29.00 TO 30.50	QUARTZ VEIN <QV>	Colour - white. Grain Size - aphanitic. Quartz vein with clay gouge. Minor graphite near lower contact.			Nil	
30.50 TO 32.70	CHERT AND ARGILLITE <CHT+ARG>	Colour - light grey - black. Grain Size - aphanitic. Bedded pure grey chert with argillite laminae. Abundant quartz veining. Quite deformed with core angles from 20-70o.	20 - 70		2-3% py, usually in specific (argillite) beds.	
32.70 TO 35.70	FAULT GOUGE WITH QUARTZ <FLT+QTZ>	Grey muddy fault gouge with abundant white quartz, locally healed breccia.				
35.70 TO 41.80	MUDDY TUFF <MUT>	Colour - grey. Grain Size - fine grained. Fairly typical debris flow with mainly chert frags and local argillite beds. Moderate to strong foliation.	60		<10-20% py> 10-20% py. Locally increasing to 50% or more.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	GEOCHEMICAL Sb ppm	As ppm	Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t		C	S
BCD5987	18.40	20.50	2.10	0.22	2.85	1.04	298	0.20						2.81	8.69	0.006			
BCD5988	20.50	22.40	1.90	0.01	0.04	0.01	2.7	0.01						2.81	0.08	0.001			
BCD5989	26.90	28.40	1.50	0.01	0.02	0.01	8.2	0.02							0.24	0.001			

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 695.10N
EAST: 9738.70W
ELEV: 1617.10

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

COLLAR DIP: -72° 0' 0"
LENGTH OF THE HOLE: 195.40m
START DEPTH: 0.00m
FINAL DEPTH: 195.40m

COLLAR GRID AZIMUTH: 157° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 202° 0' 0"

DATE STARTED: May 19, 1987
DATE COMPLETED: May 21, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
34.14	-	-70° 0'	ACID	OK		-	-	-	-	-	
89.61	-	-69° 0'	ACID	OK		-	-	-	-	-	
144.78	-	-69° 0'	ACID	OK		-	-	-	-	-	
184.71	-	-69° 0'	ACID	OK		-	-	-	-	-	
126.50	186° 0'	-72° 0'	TRO-PARI	OK		-	-	-	-	-	
184.40	192° 0'	-72° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.10	CASING <OB>					
3.10 TO 106.10	MAFIC PYRO-CLASTICS <MPYRO>	Colour - medium green. Grain Size - fine grained. Lapilli size fragments in a fine grained chl altered matrix with lapilli monolithic with remnant mafic phenos chl altered. 17.4 - 26.2 Tuffaceous section with occasional lapilli, rare lapilli has qtz filled vesicle. Bedding @ 37.5m---------- Bedding @ 50m ---------- Bedding @ 80m ---------- 97.8 - 106.1 Sericite + quartz alteration increases in fault zone.	 45 60 50	Matrix chl altered. Lapilli sericite and carb. altered. 5% qtz +/-carb veins. - Weathering on fract. to 13.4	<tr py> - Generally tr dissem. py. - Occasional py veinlet associated with quartz vein. |97.8 - 106.1| <5% py> Py increases to 5% in zone.	Fault with gouge |66.9 - 67.3| <FLT> Strong fault with clay gouge 68.9 - 70.8. Moderate fault zone with clay gouge |85.3 - 88.1| <FLT> Strong fault zone |98.4 - 110.5| <FLT> with clay gouge and ang. qtz vein frags.
106.10 TO 146.20	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. Well laminated mafic tuff with chert beds + frags. - Variolites? in some tuff bands. - Some (lapilli or tuff frags?) in certain zones (ghosting). Bedding @ 117.4m ---------- 142.8 - 143.3 Matrix is dominantly argillite (confirms sed. nature). Bedding @ 143.2m ----------	 70 60	Mafic tuff stronglly sericite altered with 10% qtz+/-carb veinlets.	<10% py> Avg. 10% dissem. py 124.2 - 124.4 Quartz veins with 10% cpy, 5% sphal (lt), 5% gal, tr tet. 140.1 - 140.15 Quartz vein with 5% sphal, 3% gal, tr tet. |145.3 - 146.2| <30% py> Syngenetic pyrite increases in the matrix with occasional 5cm 80% py bed otherwise 30% py.	
146.20 TO 190.10	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. - A slump breccia with a muddy-pyritic matrix 30-40% py with beds + frags of argillite, chert and py. 146.2 - 154.5 Quite chert rich zone with buff + grey chert. Bedding @ 150m ---------- 154.5 - 190.1	 50	Some silicification by quartz veinlets.	 146.2 - 154.4 Tr sphal as dissem. (lt colored, 15-20% syng. fine grained py. |154.5 - 164.2| <40% py>	

OCK YPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
	More argillite with 40% py with occasional py bed. Bedding @ 170m ---------- Bedding @ 190m ----------	 65 60		40% py silicified zones 1-10cm with mineralization avg. over width (5% vol). 2% sphal, 1% gal, tr-1% tet. 164.4 - 165.1 60% silicified with avg. of 10% sphal, 5-7% Tet, 3-4% galena. 165.1 - 171.0 10% silicified zones with avg. over width 2-3% sphal, 1-2% gal, tr tet. 171.0 - 178.7 Tr sphal, 30+% py. 178.7 - 184.3 30% silicified, 5-8% lt. sphal, 2-3% gal, 1% tet, tr cpy (occasional milky white quartz vein with 5% gal). 188.1 - 190.0 Milky quartz vein with 30% py, 1-2% galena, 1% sphal, tr tet.	Fault zone with clay gouge + 60% py {165.1 - 166.0} «FLT» {184.5 - 184.7} «FLT» Fault with clay gouge.
:TONE	Colour - light grey. Grain Size - fine grained. Well laminated mudstone with a mafic tuff component(?). Bedding @ 192m ----------	 45	Rare milky white quartz vein. Mafic tuff? Sericite altered.	2% py veinlets.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	MENTS
BCD5179	153.00	154.50	1.50				12.5	0.05			425	2500	1420				
Averages	154.50	165.00	10.50	0.24	0.70	0.53	78.3	0.21						2.96	2.28	0.006	
BCD5180	154.50	156.00	1.50	0.39	0.81	0.68	106	0.07	0.20	0.04				2.94	3.09	0.002	
BCD5181	156.00	157.50	1.50	0.16	0.21	0.23	40.7	0.12	0.06	0.02				2.94	1.19	0.004	
BCD5182	157.50	159.00	1.50	0.14	0.65	0.72	38.3	0.06	0.04	0.01				2.87	1.12	0.002	
BCD5183	159.00	160.50	1.50	0.05	0.19	0.12	12.2	0.15	0.01	0.01				2.99	0.36	0.004	
BCD5184	160.50	162.00	1.50	0.34	0.66	0.34	104	0.20	0.17	0.05				2.89	3.03	0.006	
BCD5185	162.00	163.50	1.50	0.41	0.28	0.28	110	0.24	0.20	0.06				2.92	3.21	0.007	
BCD5186	163.50	165.00	1.50	0.19	2.10	1.36	137	0.64	0.08	0.02				3.16	4.00	0.019	
BCD5187	165.00	166.50	1.50	0.03	0.53	0.20	15.2	0.45	0.01	0.01				3.33	0.44	0.013	
BCD5188	166.50	168.00	1.50	0.01	0.18	0.13	9.9	0.25	0.01	0.01				2.98	0.29	0.007	
BCD5189	168.00	169.50	1.50	0.02	0.06	0.12	15.8	0.40	0.01	0.02				2.94	0.46	0.012	
BCD5190	169.50	171.00	1.50	0.01	0.70	0.13	12	0.23	0.01	0.01				2.96	0.35	0.007	
BCD5191	171.00	172.50	1.50				32	0.10			380	5000	3950				
BCD5192	178.70	180.20	1.50	0.07	0.29	0.28	38.4	0.26	0.02	0.01				3.05	1.12	0.008	
BCD5193	180.20	181.70	1.50	0.04	1.70	0.90	29.6	0.58	0.01	0.05				3.09	0.86	0.017	
BCD5194	181.70	183.20	1.50	0.01	0.37	0.33	32	0.64	0.02	0.02				2.98	0.93	0.019	
BCD5195	183.20	184.90	1.70	0.13	1.02	1.85	39.7	0.06	0.01	0.04				3.09	1.16	0.002	
BCD5196	188.10	190.00	1.90	0.00	0.13	0.31	4.3	0.12	0.01	0.01				2.91	0.13	0.004	

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 645.70N
EAST: 10018.90W
ELEV: 1482.60

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 75.00m
START DEPTH: 0.00m
FINAL DEPTH: 75.00m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 19, 1987
DATE COMPLETED: May 20, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
46.30	-	-90° 0'	ACID	OK		-	-	-	-	-	
74.30	-	-89° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 12.20	CASING <OB>					
12.20 TO 37.90	QUARTZITE + ARGILLITE <QITE+ARG>	Colour - light grey - black. Grain Size - medium - fine grained. - Medium grained quartzite with an argillite matrix interbedded with argillite beds that are fine grained. - Some argillite quite graphitic + mod. conductive - Quartzite has equigranular 1mm qtz grains. Bedding parallel to foliation @ 25m ----------	45	- Hematite on fract. 5.5 - 17.8. - Occasional milky white quartz vein + veinlet.	Tr - 1% dissem. py.	60% recovery
37.90 TO 41.80	QUARTZITE <QITE>	Colour - light grey. Grain Size - medium grained. - Gradational contact with argillite gradually decreasing. - Equigranular qtz grains (1mm) in a fine grained matrix with mafic tuff. - Occasional 2-3mm qtz grains and black argillite? chip. Bedding @ 38m ----------	45	- Mafic tuff sericite altered.	1% dissem. py 39.8 - 41.8 5% dissem. py.	Fault with clay gouge |41.6 - 41.8| <FLT>
41.80 TO 44.20	"SILVER ZONE" QUARTZ VEIN <AG ZONE>	<qv + sul> Colour - milky white. Grain Size - aphanitic. - Massive milky white quartz vein with 5% blebs of sulphides.		Silicification.	<2% sp, 2% tet, tr cpy> 5% sulphides as blebs. 2% brown sphal, 2% tet, tr cpy.	70% recovery.
44.20 TO 69.80	QUARTZITE <QITE>	Colour - light grey. Grain Size - fine-medium grained. - Generally massive rock with a weak mafic tuff component in the matrix. - Occasional fine grained unit with laminations. Bedding @ 60.4m---------- - 69.7 chert fragments (rounded 2cm) appear + occas. argillite frag 65.8 - 69.8	45	- Some silicification by quartz veins. - Sericite strong in mafic tuff but decreases down the unit. 65.8 - 68.0 Strongly silicified zone with a light green mineral (talc).	Avg. 8% py dissem. + veinlets. 65.8 - 68.0 15% dissem. py.	Fault zone with clay gouge 44.7 - 44.8. Fault zone with clay gouge 50.2 - 52.8 |50.2-52.8| <FLT> 50% recovery

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
69.80 TO 75.00	"MUDDY TUFF" <MUT>	Colour - light grey Grain size - fine grained-aphanitic Dominantly a chert with 30% argillite and 5% mafic tuff. Often a slump breccia with sub-angular-angular chert frags and rarely py frags. Bedding @ 71.9m -------- END OF HOLE	45	Mafics sericite altered 20% milky quartz veins	Argillite contains 15% fine grained py + occasional py frag.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	MENTS
BCD5946	40.30	41.80	1.50				1.6	0.05			15	58	4				
BCD5947	41.80	43.00	1.20	0.04	0.08	0.02	15.6	0.06						2.70	0.46	0.002	
BCD5948	43.00	44.20	1.20	0.14	3.79	0.01	63.2	0.11						2.78	1.84	0.003	
BCD5949	44.20	45.70	1.50				3.4	0.04			205	230	1500				
BCD5950	65.80	68.00	2.20				10.4	0.06			295	420	340				

PROJECT NAME: SAM
PROJECT NUMBER: 312
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 645.70N
EAST: 10018.90W
ELEV: 1482.60

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

COLLAR DIP: -55° 0' 0"
LENGTH OF THE HOLE: 66.10m
START DEPTH: 0.00m
FINAL DEPTH: 66.10m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 21, 1987
DATE COMPLETED: May 21, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE:

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
46.30	-	-53° 0'	ACID	OK		-	-	-	-	-	
66.10	-	-52° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 13.70	CASING «OB»					
13.70 TO 14.30	BOULDERS «BOULDERS»					
14.30 TO 20.00	QUARTZITE «QITE»	Colour - grey. Grain Size - fine-medium grained. Homogeneous, granular quartz grains with sericite matrix and black flecks of argillite.			Trace py.	25% recovery.
20.00 TO 22.50	MAFIC TUFF WITH CHERT «SERT+CHT»	Colour - buff. Grain Size - fine grained. Schistose sericitic material with quartz (chert?) bands. Includes a 10cm bed of pyritic muddy tuff.	85	Intense sericite alteration to the mafic tuff.	5% py except for 10cm of 35% py with tr sp in muddy tuff.	20% recovery.
22.50 TO 32.60	QUARTZITE/ SILTSTONE «QITE+SILT»	Colour - grey. Grain Size - fine-medium grained . Includes a few grey-blue quartz grains in the first few cms. Rare fine argillite laminea.	85	Minor sericite in matrix to quartz grains. 29.6 - 32.6. Silica flooding.	1-2% dissem. py. 5% py locally increasing to 15%.	
32.60 TO 35.00	SERICITIC SEDIMENTS «MUD+SILT»	Colour - buff and grey. Grain Size - fine grained. Mudstone and siltstone with a strong sericitic component (poss. tuffaceous). Very sharp boundaries between sericitic and non-sericitic. Some quartzite component.	80	˜ser seriticite alteration	5% py both disseminated and in quartz veinlets.	25% recovery.
35.00 TO 37.50	QUARTZ VEIN «QV»	Colour - white. Grain Size - aphanitic. White bull quartz with gouge and wallrock fragments. Badly ground.			2% 'blackjack' sp, 2% gn in small patches in quartz.	20% recovery.
37.55 66.10	MUDDY TUFF «MUT	Colour - grey.46.3 - 46.4 Quite coarse quartzite debris flow initially, becoming finer downhole. Strongly foliated. 46.3 - 46.4 Dark, slightly cherty pyritic argillite bed. 47.5 - 51.5	80	Some sericite.	5-10% dissem. py. 3% sp, 3% gn, 2% tet in quartz veinlets in muddy tuff. 46.3 - 45.4 25% py.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		More heterogenous with argillitic beds, quartz veins and gougey zones. 54.5 - 66.1 Typical fine pyritic debris flow. More homogeneous but still strongly foliated.	80		Argillite beds generally pyritic. 20-25% fine pyrite throughout.	

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA 1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 695.10N
EAST: 9739.70W
ELEV: 1617.10

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

COLLAR DIP: -80° 0' 0"
LENGTH OF THE HOLE: 209.10m
START DEPTH: 0.00m
FINAL DEPTH: 209.10m

COLLAR GRID AZIMUTH: 148° 0' 0"

COLLAR ASTRNOMIC AZIMUTH: 193° 0' 0"

DATE STARTED: May 22, 1987
DATE COMPLETED: May 23, 1987
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: YES

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
28.04	-	-79° 0'	ACID	OK		-	-	-	-	-	
111.60	-	-79° 0'	ACID	OK		-	-	-	-	-	
163.30	-	-75° 0'	ACID	OK		-	-	-	-	-	
203.00	-	-76° 0'	ACID	OK		-	-	-	-	-	
207.00	200° 0'	-76° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 0.00 TO 147.80	MAFIC PYROCLASTIC <MPYRO	not yet logged				
147.80 TO 148.50	CHERTY ARGILLITE <CHT ARG>	Colour - black. Grain Size - aphanitic. Broken and gouged, probably in fault contact with mafics. Black somewhat cherty argillite with minor quartz.	75			
148.50 TO 209.10	MUDDY TUFF <MUT>	Colour - grey. Grain Size - fine grained. 148.5 - 149.1 Cherty beds @ ---------- 149.1 - E.O.H. Homogeneous, competent muddy tuff with vague cherty beds. Local argillitic laminae.	75	<silica flooding> Zones of silica flooding accompany sulphides.	<10-15% py> 10-15% py except as noted. 152.3 - 154.0 4% tet, 3% sp with quartz in silica flooded zones. 154.0 - 161.2 1-2% sp, 1% tet, <1% gn. 161.2 - 162.8 4% sp, 2% tet, 2% gn. 162.8 - 169.6 1% sp, 1% tet, 1% gn in evenly spaced zones. 169.6 - 174.0 4% sp, 3% gn, 3% tet in strong silica flooding. 174.0 - 181.1 1% sp, 1% gn, 1% tet in regular zones. 181.1 - 182.65 25% py, 10% sp, 5% gn, 5% tet. 182.65 - 187.8 1% sp, 1% tet, 1% gn. 187.8 - 191.95 20% py, 5% sp, 5% gn, 4% tet. 191.95 - 199.0 1% tet, 1% sp, 1% gn.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t		MENTS
BCD5990	152.30	154.00	1.70	0.39	0.41	0.39	84	0.08	0.21	0.01				2.86	2.45	0.002		
BCD5991	154.00	156.00	2.00				0.4	0.03			86	129	137					
BCD5992	156.00	158.20	2.20	0.01	0.03	0.02	2.5	0.05	0.01	0.01				2.86	0.07	0.001		
BCD5993	158.20	159.70	1.50	0.01	0.04	0.02	2.4	0.07	0.01	0.01				2.92	0.07	0.002		
BCD5994	159.70	161.20	1.50	0.05	0.11	0.10	10.2	0.12	0.03	0.01				2.89	0.30	0.004		
BCD5995	161.20	162.80	1.60	0.13	2.40	1.16	29.8	0.20	0.06	0.02				3.16	0.87	0.006		
BCD5996	162.80	163.70	0.90	0.01	0.12	0.38	4.8	0.14	0.01	0.01				3.03	0.14	0.004		
BCD5997	163.70	165.10	1.40	0.06	0.27	0.30	12.5	0.18	0.03	0.03				3.01	0.36	0.005		
BCD5998	165.10	166.60	1.50	0.13	0.28	0.41	23.2	0.24	0.06	0.04				3.05	0.68	0.010		
BCD5999	166.60	168.10	1.50	0.06	0.81	0.35	16.2	0.19	0.03	0.01				2.94	0.47	0.006		
BCD6000	168.10	169.60	1.50	0.27	0.58	0.90	70.2	0.22	0.17	0.07				3.03	2.05	0.006		
BCD5151	169.60	171.10	1.50	0.01	0.51	0.62	8.4	0.17	0.01	0.02				2.91	0.25	0.005		
AVERAGE	171.10	174.00	2.90	0.49	1.69	1.53	158.8	0.23						3.17	4.63	0.007		
BCD5152	171.10	172.70	1.60	0.64	1.08	2.10	192	0.24	0.38	0.10				3.21	5.60	0.007		
BCD5153	172.70	174.00	1.30	0.31	2.45	0.83	118	0.22	0.18	0.02				3.13	3.44	0.006		
BCD5154	174.00	175.30	1.30	0.01	0.01	0.03	2.4	0.10	0.02	0.03					0.07	0.003		
BCD5155	175.30	176.60	1.30	0.01	0.19	0.11	7.2	0.28	0.02	0.01					0.21	0.008		
BCD5156	176.60	178.10	1.50	0.03	0.18	0.14	12	0.40	0.02	0.01					0.35	0.012		
BCD5157	178.10	179.60	1.50	0.02	0.02	0.07	10	0.21	0.01	0.02					0.29	0.006		
BCD5158	179.60	181.10	1.50	0.01	0.03	0.12	2.1	0.09	0.02	0.01				2.98	0.06	0.003		
BCD5159	181.10	182.65	1.55	0.05	2.84	1.02	16.8	0.08	0.04	0.02				3.21	0.49	0.002		
BCD5160	182.65	184.70	2.05	0.01	0.04	0.12	2	0.17	0.02	0.01				2.99	0.06	0.005		
BCD5161	184.70	186.20	1.50	0.03	0.18	0.28	6	0.20	0.02	0.01					0.18	0.006		
BCD5162	186.20	187.80	1.60	0.07	0.39	0.63	18.2	0.38	0.04	0.06					0.53	0.011		
BCD5163	187.80	189.30	1.50	0.07	0.30	0.20	24	0.12	0.03	0.03				3.21	0.70	0.004		
BCD5164	189.30	190.55	1.25	0.06	2.68	1.39	32	0.21	0.03	0.01				3.25	0.93	0.006		
BCD5165	190.55	191.95	1.40	0.09	3.35	0.70	24.2	0.35	0.04	0.05				3.25	0.71	0.010		
BCD5166	191.95	192.95	1.00	0.08	0.50	0.25	30.1	0.34	0.04	0.04				3.07	0.88	0.010		

MINNOVA INC.

HOLE : : RG119 — DRILL HOLE RECORD — IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 754.80N
EAST: 9673.20W
ELEV: 1677.60

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

COLLAR DIP: -76° 0' 0"
LENGTH OF THE HOLE: 279.50m
START DEPTH: 0.00m
FINAL DEPTH: 279.50m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 22, 1987
DATE COMPLETED: May 26, 1987
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: YES

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
47.90	-	-76° 0'	ACID	OK		-	-	-	-	-	
89.60	-	-73° 0'	ACID	OK		-	-	-	-	-	
185.00	-	-70° 0'	ACID	OK		-	-	-	-	-	
252.10	-	-72° 0'	ACID	OK		-	-	-	-	-	
279.50	-	-72° 0'	ACID	OK		-	-	-	-	-	
214.00	220° 0'	-74° 0'	TRO-PARI	OK		-	-	-	-	-	
279.00	217° 0'	-72° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 0.00 0.00 TO 3.10	CASING CASING <OB>					
3.10 TO 233.10	MAFIC PYRO- CLASTICS <MPYRO>	Colour - medium green. Grain Size - fine grained. - A fine grained matrix with lapilli. - Lapilli have remnant mafic phenos and quartz filled vesicles and often have quartz filled amygdules. - Also common are beds of leucoxene and as well as in lapilli. - Lapilli rounded + flattened to sub-angular. Bedding @ 7m ---------- Bedding @ 59m ---------- Bedding @ 89m ---------- Bedding @ 133m ---------- Bedding @ 167m ---------- Bedding @ 215m ----------	 70 70 65 70 65 80	Matrix strongly chl altered. Lapilli sericite altered. - 5% quartz +/-carb. veinlets. 22.5 - 29.0 Silicified + sericite altered zone with 10% py. 38.5 - 40.9 Large quartz vein with chl + talc alteration + a fine grained black mineral, 20% (Sulphide?). 89.4 - 93.8 Quartz + sericite alteration with 5-10% py. 105.1 - 107.3 Quartz + sericite alteration with 5% py. 180.0 - 186.5 A zone with strong quartz-sericite alteration. 197.0 - 226.7 Sericite alteration steadily increases down the hole. 226.7 - 233.1 Sericite alteration becomes intense.	<tr py> Background tr dissem. py. 22.5 - 29.0 10% py dissem. 89.4 - 93.8 5-10% py dissem. 105.1 - 107.3 5% py dissem. 127.5 Quartz veinlet with 2% gal, 1% cpy. 160.5 5cm Quartz Vein with 5% py, 1% cpy dissem. 180.0 - 186.5 <10% py> 10% py. Quartz stringers carry dissem. gal, cpy, sp, tet dissem. Avg. over width, 1% gal, .5% cpy, tr sp (lt), tet.	27.5 - 28.0 <FLT> Intense fault with sand gouge. 89.6 - 90.0 <FLT> Intense fault with clay gouge. 117.9 - 118.4 <FLT> Intense fault with clay gouge. 147.5 - 147.8 <FLT> Intense fault with sand + clay gouge. 152.0 - 152.7 + 154.7 - 156.5 <FLT> Shear Zones with clay gouge, quartz chips + broken rock. 161.5 - 161.8 <FLT> Fault with clay gouge + quartz chips. Fault zone with broken rock. 176.3 - 177.0 <FLT> 179.8 - 180.0 <FLT> Fault with clay gouge + broken rock.
233.10 TO 233.60	MAFIC TUFF					
TO 2336.00	WITH CHERT	Colour				
TO TO TO TO	WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained to aphanitic.				Strong fault with clay + rock chips

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
TO TO 233.60	WITH CHERT WITH CHERT	Mafic tuff as a matrix with well rounded frags of chert 1-2cm. Bedding @ 233.4m ----------	80			¦233.1 - 233.3¦ <FLT>
233.60 TO 244.40	CHERT WITH MINOR ARGILLITE <CHT+ARG>	Colour - light grey. Grain Size - aphanitic to fine grained. - A massive lt grey chert with occasional angular argillite fragments. 234.4 - 235.1 Bed of finely laminated argillite. Bedding @ 235m ----------	80	- Some silicification. - Silica Gel hosts mineralization.	¦233.6 - 238.6¦ <10% py> Avg. 10% dissem. + laminated syng. py except 234.2 - 234.6 which is a silica vein with 50% py coarse cubes, 5% lt sp (dissem.), 1% gal dissem. ¦238.6 - 244.4¦ <20-30% py,sp,gn,tet> 25% silicified zones, 3-40cm with 20-30% coarse py dissem., 5-8% lt. sp. dissem., 5% gal dissem, 1% Tet dissem.	Alnos a "Muddy Tuff" in zones.
244.40 TO 255.50	ARGILLITE <ARG>	Colour - black. Grain Size - fine grained. Generally massive argillite with occasional bed of mudstone + chert. Bedding @ 252.1m ----------	60	244.4 - 251.5 5% silicification by quartz veinlets 251.5 - 255.5 50% silicification with mineralization + occasional angular argillite frag.	<10% py> 244.4 - 251.5 Quartz veinlets have 10% py dissem., tr sp, tet + gal dissem. 251.5 - 255.5 50% silicification with 30% py blebs, 10% lt sp dissem, 2% gal dissem, 1% tet dissem.	N.B. Argillite weakly conductive (graphite).
255.50 TO 266.00	CHERT WITH ARGILLITE <CHT+ARG>	Colour - light grey. Grain Size - aphanitic to fine grained. A lt. grey chert matrix with angular .5 - 2.0cm frags of chert + argillite. - 10% laminated + dissem. syng. py. Bedding @ 264.0m ----------	80	255.5 - 261.2 25% silicified zones.	255.5 - 261.2 25% silicified zones with 15% dissem lt. sp, 5% gal dissem., 1-2% tet dissem.	¦274.1¦ <FLT> 10cm fault zone with broken rock.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
266.00 TO 279.50	"MUDDY TUFF" <MUT>	Colour - medium grey Grain size - fine grained to aphanitic A fine grained argillite matrix with 15% fine grained pyrite. Mixed 50% argillite, 50% chert with chert beds, rounded .5-2.0cm frags of chert and rarely and. Bedding @ 276.0m ---------- End of hole	60	5% silicification by qurtz veins	<30% py, 15% sp, 10% gn, 1% tet> 269.7-272.8 15% silicified zone 2-15cm with 30% py blebs, 15% lt sp blebs, 1% tet dissem, 10% gal blebs	274.1 <FLT> 10cm fault zone with broken rock

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5451	38.50	39.50	1.00				1	0.01			26	139	25				
BCD5452	39.50	40.90	1.40				0.7	0.01			24	117	16				
BCD5453	180.00	181.50	1.50				1.7	0.02			63	590	355				
BCD5454	181.50	183.00	1.50				1.7	0.02			152	270	165				
BCD5455	183.00	184.50	1.50				1.2	0.02			56	162	52				
BCD5456	184.50	186.50	2.00														
BCD5457	237.10	238.60	1.50				6.2	0.01			175	815	540				
BCD5458	238.60	240.10	1.50	0.11	1.52	1.05	52.2	0.18	0.04	0.03				3.01	1.52	0.005	
BCD5459	240.10	241.60	1.50	0.07	1.06	0.93	28.2	0.07	0.02	0.05				2.91	0.82	0.002	
BCD5460	241.60	243.10	1.50	0.02	0.14	0.21	8	0.04						2.76	0.23	0.001	
BCD5461	243.10	244.40	1.30	0.17	0.80	0.42	33	0.17	0.07	0.02				NA	0.96	0.005	
BCD5462	244.40	245.90	1.50				37.5	0.11			1660	11000	4100				
BCD5463	245.90	247.40	1.50				2.8	0.05			69	2600	750				
BCD5464	247.40	248.90	1.50				1.6	0.01			37	810	220				
BCD5465	248.90	250.40	1.50				2.7	0.04			56	1600	410				
BCD5466	250.40	251.50	1.10				2.1	0.05			54	395	415				
BCD5467	251.50	253.00	1.50	0.04	1.08	0.24	10.4	0.20	0.01	0.02				2.87	0.30	0.006	
BCD5468	253.00	254.50	1.50	0.24	1.10	0.85	48	0.22	0.10	0.10				2.92	1.40	0.008	
BCD5469	254.50	255.50	1.00	0.15	2.36	0.76	30	0.29	0.06	0.12				3.18	0.88	0.008	
BCD5470	255.50	257.00	1.50	0.05	1.90	0.67	18	0.20	0.01	0.02				2.89	0.53	0.006	
BCD5471	257.00	258.50	1.50	0.02	0.04	0.06	4.2	0.21	0.01	0.01				2.84	0.12	0.006	
BCD5472	258.50	260.00	1.50	0.02	0.08	0.04	2.4	0.17	0.01	0.01				2.76	0.07	0.005	
BCD5473	260.00	261.20	1.20	0.04	0.80	0.54	16.3	0.18	0.01	0.01				2.91	0.48	0.005	
BCD5474	261.20	262.70	1.50				1.9	0.02			67	59	81				
BCD5475	269.70	272.80	3.10	0.05	0.56	0.44	24.1	0.20	0.01	0.01				2.87	0.70	0.006	

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 708.30N
EAST: 9904.80W
ELEV: 1541.40

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 169.80m
START DEPTH: 0.00m
FINAL DEPTH: 169.80m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 24, 1987
DATE COMPLETED: May 26, 1987
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: YES

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
70.10	-	-90° 0'	ACID	OK		-	-	-	-	-	
121.00	-	-88° 0'	ACID	OK		-	-	-	-	-	
166.60	-	-86° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.10	CASING <OB>					
3.10 TO 45.60	MAFIC					
TO 6.20	PYRO-	Colour				
TO TO TO TO TO TO TO TO TO TO 45.60	PYRO-	Colour - Meduim green				
6.20	CLASTICS					
45.60 45.60 45.60 45.60 45.60 45.60 45.60	CLASTICS <MPYRO>	grained matrix. Grain size - fine grained - Lapilli flattened + rounded with chl altered remnant mafic phenos and occasional vesicles. Bedding @ 29m ----------	45	- Matrix chl altered. - Lapilli are seric. +/- carb. altered.	3.1 to 7.6 10% dissem. py. Tr - 1% ppy dissem. with occasional py veinlet.	9.45 - 10.6 Weak fault with broken rock.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
45.60 TO 59.10	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. - Finely laminated mafic tuff with chert beds + frags. - 52.6 - 54.4 Mudstone replaces mafic tuff as the matrix. - Some soft sediment deformation. Bedding @ 53m ----------	45	- Mafic tuff is strongly sericite altered. - Some silicification.	<2-3% py> 2-3% dissem. py.	|45.6 - 47.8| <FLT> Fault with clay gouge + broken rock. |56.9 - 57.6| <FLT> Mod. fault with broken rock.
59.10 TO 68.90	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. - Laminated argillite matrix with chert beds + frags. - Gradational contacts with some mafic tuff beds. - Frags sub-round to subangular as a slump breccia Bedding @ 64.5m ----------	50	Mafic tuff sericite altered. - Some silicification.	<5-8% py> 5-8% py.	
68.90 TO 80.30	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. - Laminated mafic tuff with chert beds + angular frags. - Beds are often contorted by soft sed. deformation. - Occasional argillite fragment. Bedding @ 76m ----------	50	- Mafic tuff strongly sericite altered. - 5% quartz veins.	<5% py> 5% py dissem. 68.9 - 76.8 Increases to 20% dissem. py. 76.8 - 80.3	
80.30 TO 112.50	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. - Transitional contact with mafic tuff in an argillite matrix. - Many units from chert to argillite with slump breccia zones with frags of py, chert and argillite as well as soft sed. deformation with slumping + loading. - Some pyrite beds with 80% py 84.0 - 84.3 84.8 - 85.0 Bedding @ 90m ---------- Bedding @ 102m ----------	45 40	- Mafic tuff sericite altered. - 2-3% quartz veinlets.	<25% py> Avg. 25% dissem. fine grained syng. py in matrix.	Strong fault zone with clay gouge |93.0 - 93.8| <FLT>

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
112.50 TO 117.20	QUARTZITE TO FINE GRAINED CONGLOM-ERATE <QITE>	Colour - light grey. Grain Size - medium grained to very coarse. Quartzite but much coarser grained with zones of conglomerate with chert pebbles up to 10mm in dia. Pebbles of grey & white chert in a silicified groundmass. N.B. Grading suggests tops up-hole (reverse grading?). Bedding @ 112.4m ----------	45	Weak silicification.	115.8 - 116.4 Milky white quartz vein with tr - 1% dissem. tet.	
117.20 TO 166.50	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. - An argillitic-pyritic matrix with chert beds occas. mafic tuff laminations and slump breccias with frags chert, argillite and pyrite. Bedding @ 127.6 ---------- - Some massive pyrite beds with 90% syngenetic pyrite 132.6 - 132.7 149.4 - 149.5 Bedding @ 148.5 ---------- Bedding @ 160.6 ----------	45 45 50	Some silicification by quartz veins. - Mafic tuff strongly sericite altered.	<25% py> - Avg. 25% syng. py in matrix. - Occas. 80% py bed.	Fault zones with clay gouge 129.8 - 130.1 <FLT> 132.2 - 132.3 <FLT> 155.1 - 155.4 <FLT> 163.3 - 163.4 <FLT> Strong fault with clay gouge + quartz chips 164.3 - 165.3.
166.50 TO 169.00	CHERT <CHT>	Colour - light grey. Grain Size - aphanitic. Massive light grey chert. Bedding @ 168.5 ---------- END OF HOLE	10	Some silicification.	<20% py> 20% pyrite along bedding.	N.B. Fault zone has tipped units.

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t		'MENTS
BCD5197	114.30	115.80	1.50				3.6	0.04			108	630	169					
BCD5198	115.80	116.40	0.60	0.01	0.01	0.02	1	0.02	0.01	0.01				2.75				
BCD5199	116.40	117.90	1.50				3.3	0.04			116	144	118					

NOVA INC.

D. HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 714.50N
EAST: 9873.60W
ELEV: 1558.60

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

COLLAR DIP: -85° 0' 0"
LENGTH OF THE HOLE: 190.20m
START DEPTH: 0.00m
FINAL DEPTH: 190.20m

COLLAR GRID AZIMUTH: 180° 0' 0"

COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 27, 1987
DATE COMPLETED: May 29, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
51.00	-	-84° 0'	ACID	OK		-	-	-	-	-	
92.70	-	-81° 0'	ACID	OK		-	-	-	-	-	
144.80	-	-79° 0'	ACID	OK		-	-	-	-	-	
187.10	-	-78° 0'	ACID	OK		-	-	-	-	-	
199.00	200° 0'	-78° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 2.40	CASING <OB>					
2.40 TO 45.70	MAFIC PYRO-CLASTICS <MPYRO>	Colour - medium green. Grain Size - fine grained. - Lapilli in a fine grained chl altered matrix. - Lapilli seric. altered and rounded with remnant mafic phenos + vesicles (qtz filled). - Some lapilli have remnant feldspar porphyry i.e. 20.2. Bedding ----------	50	- Matrix chl altered. - Lapilli seric. + carb. altered. 2.4 - 4.9 more intensely seric. altered with quartz veins 25%. Hematite on fract. {4.9 - 36.3} <qtz-carb vns> 8% Qtz-carb veinlets. 36.3 - 45.7 Seric. alteration increasing with hematite on fract. + 20% Qtz/Carb veins	2.4 - 4.9 10% dissem. py. 36.0 5cm Qtz/Carb vein with 20% cpy, 5% galena, 5% lt. sphal. 4.9 - 36.3 Tr py. 36.3 - 45.7 Up to 5% dissem. py.	
45.70 TO 49.50	QUARTZ VEIN WITH MINERAL-IZATION <QV>	Colour - milky white. Grain Size - aphanitic. Multi-episodic vein with cross-cutting quartz vein + gash veins + vein breccia.		Seric. wisps.	<5-8% py, 2-3% cpy, 1% gn, tr tet> 5-8% py as veinlets, 2-3% cpy as blebs, 1% galena, tr tet.	
49.50 TO 67.50	MAFIC PYRO-CLASTIC <MPYRO>	Colour - medium green. Grain Size - fine grained. - Lapilli in a fine grained matrix. - Lapilli have remnant chl altered phenos + some qtz filled vesicles. - Monolithic. Bedding @ 60m ----------	50	- Matrix a chl + sericite altered fine grained rock. - 10% milky white quartz veins. - Lapilli sericite + carb. altered. N.B. Alteration stronger than upper mafic zone.	49.5 - 51.0 10% dissem py. 51.0 - 67.5 5% dissem. py. Quartz veins have tr tet. 56.7 5cm quartz vein with 15% py, 10% gal, 2% cpy, tr tet.	
67.50 TO 91.30	MAFIC TUFF WITH CHERT <MT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. Finely laminated mafic tuff with chert beds and round fragments 1-4cm. - Some soft sed. deformation. - 75.6 - 76.1 Argillite + chert band (mafic tuff not a sed. alteration). Bedding parallel to foliation @ 69m ----------	60	- Mafic seric. + chl altered. - 2% qtz-carb. veining. - Milky white quartz veins 76.1 - 76.6 81.2 - 83.3	<5% py> 5% dissem. py. 81.2 - 83.3 Milky white quartz veins with vugs and tr - 1% tet.	Moderate faults with clay gouge @ {70.0 - 70.1} <FLT> {74.1 - 74.2} <FLT> Strong fault zone with mechanical breccia and clay gouge 75.2 - 81.2. {75.2-81.2} <FLT>

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		Bedding parallel to foliation @ 90m ----------	65			
91.30 TO 94.20	CHERT + CHERT BRECCIA <CHT+> <CHT BX>	Colour - light grey. Grain Size - aphanitic. A pure white - light grey chert with breccia zones Bedding @ 92m ----------	55		<2% py> 1-2% py.	N.B. maybe the Rea chert?
94.20 TO 98.20	MAFIC TUFF WITH CHERT + ARGILLITE <MT+CHT> <+ARG>	Colour - light green. Grain Size - fine grained. - Well laminated mafic tuff with beds + frags of chert. - Frags rounded + flattened 1-3cm. - 96.5 - 98.0 matrix is replaced as argillite rather than mafic tuff. Bedding parallel to foliation @ 97m ----------	60		<2% py> Avg. 2% dissem. py.	Fault with clay gouge |97.5 - 98.2| <FLT>
98.20 TO 111.20	QUARTZITE <QITE>	Colour - light grey. Grain Size - medium - coarse grained. - Generally a medium grained - coarse grained quartzite with rounded qtz grains. - Occasional fine grained argillite bands with slumping indicating tops downhole. 105.1 - 106.0 - Also massive fine grained syng. py beds 80% py. 106.8 - 107.3 107.5 - 108.0 - Qtz grains up to 6mm pebbles with argillite chips. Bedding @ 108m ----------	60		<10% py> 10% dissem. py in quartzite. 40-80% py in fine grained units. 101.3 5cm silicified band with 20% lt. sphal, 10% tet.	Strong fault with broken rock + clay gouge. |102.1 - 104.9| <FLT>
111.20 TO 137.20	CHERT WITH ARGILLITE <CHT+ARG>	Colour - light grey - black. Grain Size - aphanitic - fine grained. Chert interbedded with 20-30% argillite beds. Massive chert with occasional 10cm bed of 80% py syngenetic with argillite beds. Bedding @ 126m ---------- Bedding @ 137m ----------	65 60	5% quartz veins + minor silicification.	<10-15% py> Avg. 10-15% fine grained syng. veinlets. 125.0 - 126.5 Silicified zone with 1% sphal, tr tet. 135.0 - 135.2 1% sphal.	Fault with gouge + clay. |135.4 - 135.5| <FLT>

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
137.20 TO 179.20	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. - An argillite matrix with 30% fine grained pyrite with frags of chert, argillite and pyrite. - Occasional bed of quartzite + chert. - A slump breccia. Bedding @ 144m ---------- Bedding @ 170m ----------	 60 45	3% quartz veins with minor silicification.	<30% py> 30% dissem. py in argillite. 154.1 10cm silicified zone with 20% py, 10% sphal. Silver Zone 164.3 - 168.1 Silicified zones carry an average over zone 2-3% sphal as blebs, 1-2% tet as blebs, 1% gal. 164.8 - 165.8 8% Sphal, 5% tet, 3% galena.	Strong faults 172.5 - 173.1 <FLT> 173.8 - 174.4 <FLT> with clay gouge + broken rock. 173.9 - 174.5 <FLT> with clay gouge + quartz vein frags.
179.20 TO 184.90	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. Well laminated mafic tuff + chert. Bedding @ 184m ----------	 50	Mafic tuff strongly sericite altered. 10% milky quartz veins.	1-2% py.	Strong fault with clay gouge + broken rock. 180.0 - 181.6.
184.90 TO 187.20	ARGILLITE WITH CHERT <ARG+CHT>	Colour - medium grey. Grain Size - fine grained - aphanitic. Well laminated chert and argillite with occasional chert frags.		Some silicification.	10% py as dissem. and veinlets.	
187.20 TO 190.20	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. Well laminated altered mafic tuff with chert beds. Occasional chert frag (rounded). Bedding @ 190m ----------	 45	Mafic tuff sericite altered 10% milky white quartz veins.	<5% py> 5% dissem. py.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	AMENTS
BCD5167	44.20	45.70	1.50				0.2	0.03			21	150	30				
BCD5168	45.70	47.20	1.50	0.02	0.08	0.12	12.3	0.25	0.04	0.02				3.01	0.36	0.007	
BCD5169	47.20	48.70	1.50	0.06	0.16	0.10	4.4	0.02	0.04	0.03				2.92	0.13	0.001	
BCD5170	48.70	49.50	0.80	0.20	0.22	0.19	83	0.01	0.05	0.02				2.96	2.42	0.001	
BCD5171	49.50	51.00	1.50				0.3	0.04	0.02	0.01	50	177	255				
BCD5172	81.20	82.20	1.00	0.02	0.01	0.01	0.3	0.01	0.02	0.01				2.70	0.01	0.001	
BCD5173	82.20	83.30	1.10	0.01	0.01	0.01	0.2	0.01	0.01	0.01				2.73	0.01	0.001	
BCD5174	125.00	126.50	1.50				2.6	0.13			56	2000	2200				
BCD5175	162.80	164.30	1.50				1.1	0.02			60	680	240				
BCD5176	164.30	165.80	1.50	0.56	1.08	0.82	120	0.21	0.25	0.08				2.96	3.50	0.006	
BCD5177	165.80	167.30	1.50	0.03	0.32	0.23	8.4	0.01	0.01	0.02				2.92	0.25	0.001	
BCD5178	167.30	168.90	1.60				7.2	0.04			265	1500	545				

MINNOVA INC.

HOLE N: RG122 DRILL HOLE RECORD IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 754.80N
EAST: 9673.20W
ELEV: 1677.60

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

COLLAR DIP: -57° 0' 0"
LENGTH OF THE HOLE: 268.80m
START DEPTH: 0.00m
FINAL DEPTH: 268.80m

COLLAR GRID AZIMUTH: 180° 0' 0"

COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 27, 1987
DATE COMPLETED: May 31, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
53.60	-	-58° 0'	ACID	OK		-	-	-	-	-	
105.80	-	-59° 0'	ACID	OK		-	-	-	-	-	
136.20	-	-58° 0'	ACID	OK		-	-	-	-	-	
178.90	-	-59° 0'	ACID	OK		-	-	-	-	-	
212.40	-	-58° 0'	ACID	OK		-	-	-	-	-	
268.90	-	-59° 0'	ACID	OK		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.10	CASING «OB»					
3.10 TO 221.70	MAFIC PYRO-CLASTICS «MPYRO»	Colour - medium green. Grain Size - fine grained. Fine grained matrix with rounded and flattened lapilli with quartz filled vesicles and remnant mafic phenos - 10% leucoxene beds and leucoxene in lapilli Bedding @ 10m ---------- Bedding @ 49.5m ---------- Bedding @ 65.0m ---------- Bedding @ 96.0m ---------- Bedding @ 122.0m ---------- Bedding @ 159.0m ---------- 194.0 - 211.5 A mafic tuff rather than mafic pyro - Finely laminated 211.5 - 221.7 Mafic pyroclastic (as before). Bedding @ 185m ----------	80 70 80 85 85 80	- Matrix chl altered. - Lapilli sericite +/-carb. altered. - Hematite on fract. 3.1 - 5.5 - Occasional quartz-carb. veinlet 1%. 26.5 - 28.6 - Large milky quartz vein with carb +5% py. + at 32.5 - 33.7 - Carb. altered zone. 26.5 - 47.8 52.1 - 54.0 Silicified zone with 5% py. - Milky quartz veins 1-2cm often contain 5% py. 186.5 - 221.7 Sericite alteration increases dramatically as well 30% quartz carb. veins.	«tr py» Tr dissem. py Avg. 26.5 - 47.8 5% py in carb altered zone 42.8 - 44.3 Quartz Carb. vein with 5% py, tr tet. 59.8 - 62.0 Silicified zone with 1% lt. sp., 1% gal, 10% py dissem. 97.8 5cm quartz vein with 5% sp, 5% gal. {82.5 - 112.2} «5% py» 5% dissem. py {186.0 - 203.0} «10% py» Py dissem. 10% 185.6 - 188.6 Quartz veins avg. tr sp, tr gal dissem., tr tet.	Moderate fault with broken rock 27.4 - 28.0 + @ 33.7 - 34.0 Weak fault with broken rock {77.3 - 77.5} «FLT» Weak fault with broken rock {141.6 - 142.0} «FLT» {162.7 - 162.8} «FLT» Intense fault with clay gouge. {169.8 - 170.2} «FLT» Intense fault with clay gouge. {180.2 - 180.5} «FLT» Moderate fault with broken rock. {191.2 - 194.5} «FLT» Intense shear zone with broken rock clay + sand. {197.4 - 200.0} «FLT» Intense shear zone with broken rock, clay + sand.
221.70 TO 224.70	MAFIC TUFF WITH CHERT «SERT+CHT»	Colour - light green. Grain Size - fine grained - aphanitic. Finely laminated mafic tuff with chert frags. - Frags 1-3cm rounded + flattened. Bedding @ 220m ----------	80	Mafic tuff strongly sericite altered. 30% quartz +/-carb. veinlets + flooding.	«5% py» Avg. 5% dissem. py 222.6 - 222.7 with 10% sp blebs, 5% gal dissem.	N.B. maybe just a highly altered mafic pyroclastic.

FRO TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
224.70 TO 236.40	"MUDDY TUFF" <MUT>	Colour - light grey. Grain Size - fine grained. Finely laminated but lots of soft sed. deformation + slump breccia. 30% argillite, 5% mafic tuff, 20% chert, 40% siltstone + wackes. Bedding @ 227.3m ----------	75	- Some quartz-carb veinlets. - Mafic tuff strongly sericite altered.	<5% py> 5% dissem. py.	
236.40 TO 239.40	MASSIVE SULPHIDES <MS>	Colour - metallic brown. Grain Size - fine-medium grained. Chert + argillite matrix with 80% sulphides. - A well laminated matrix with dissem. sulphides + large angular frags, 1-4cm. - Slumping of syng. sulphides? Bedding ----------	70	Some silicification.	<60% py, cpy, gn, sp, tet> - 60% py as frags + fine grained laminations. - 5-7% cpy as blebs. - 3-4% galena dissem. - 2-3% lt. sphal lam. - 5% Tet dissem.	238.6 - 241.1 Intense fault with clay + sericite gouge.
239.40 TO 243.70	QUARTZ VEIN WITH SULPHIDES <QV+SUL>	Colour - light grey. Grain Size - fine grained. - Host Quartzite? A mottled appearance with cross-cutting vuggy pink veinlets (barite).			<10% py, tet, cpy, sp> 239.4 - 242.1 10-15% dissem. + blebs tet, 3-4% dissem cpy, 10% dissem. py, 1-2% lt. sp 242.1 - 243.7 5% dissem. tet, 5% cpy blebs, 5% py, 2% sp.	Strong fault with clay + sericitie gouge 242.1 - 242.3
243.70 TO 246.60	MASSIVE SULPHIDES <MS>	Colour - metallic brown. A chert breccia? matrix with dissem-laminated sulphides. Avg. 60%.		Some silicification + clay alteration.	<40-50% py> 40-50% laminated fine grained py, 5-8% sphal (lt) blebs + dissem., 2-3% cpy dissem + bleb, 2% tet dissem.	|243.7 - 247.9| <FLT> Strong shear zone with clay + sericite gouge + occasional block of solid rock.
246.60 TO 264.30	"MUDDY TUFF" <MUT>	Colour - light grey. Grain Size - fine grained to aphanitic. - A cherty matrix with 20% fine grained laminated syng. py. - Occasional angular frag. of chert + argillite. Bedding @ 248m ---------- Bedding @ 263.5m ----------	70 75	- Some silicification by silica gel and Milky Quartz veins. - Quartz Veins @ 258.7 - 259.3 259.7 - 260.9 263.0 - 263.5	246.6 - 252.8 Approx. 5% zones with silica gel carrying 10% dissem. lt. sp, 3-4% dissem. tet, 1% galena dissem. |252.8 - 261.6| <20% py> 20% dissem. py, tr silicified zones with tr sp, tr tet. 261.6 - 263.0	Strong faults with clay gouge |248.9 - 249.7| <FLT> |259.5 - 259.7| <FLT>

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
					8% silicified zones with 10% sp dissem. It, 5% tet dissem. (30% py overall). 263.0 - 263.5 Milky quartz vein with 10% py veinlets, 1% tet dissem., 1% gal. dissem.	
264.30 TO 268.80	ARGILLITE + WACKES <ARG+WAK>	Colour - medium grey. Grain Size - fine-medium grained. Well laminated argillite with interbedded massive wwackes. Bedding @ 264.5m ---------- Bedding @ 268.4m ----------	 70 70	Some silicification.	5% py in the argillite.	Strong faults with clay gouge 264.0 - 264.5 <FLT> 265.7 - 265.9 <FLT>

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	[illegible] ppm	Pb ppm	SG	Ag oz/t	Au oz/t	[illegible]	MENTS
BCD5401	42.80	44.30	1.50				1.1	0.01			27	80	119					
BCD5402	59.80	60.90	1.10				1.6	0.05			47	84	152					
BCD5403	60.90	62.00	1.10				2.5	0.02			45	3200	1820					
BCD5404	185.60	187.10	1.50				4.4	0.07			46	700	420					
BCD5405	187.10	188.60	1.50				3.3	0.05			24	260	780					
BCD5406	234.90	236.40	1.50				1.8	0.01			134	143	30					
AVERAGES	236.40	242.40	6.00	1.48	1.97	1.38	1566.6	3.00						3.14	45.70	0.088		
AVERAGES	236.40	246.60	10.20	1.26	2.31	1.28	1048	2.03						3.05	30.60	0.059		
BCD5407	236.40	237.90	1.50	2.91	3.96	3.91	2940	4.59	1.75	0.20				3.93	85.75	0.134		
BCD5408	237.90	239.40	1.50	1.87	3.53	1.50	2200	4.03	1.00	0.12				3.27	64.17	0.118		
BCD5409	239.40	240.90	1.50	0.04	0.04	0.02	36.4	0.79	0.01	0.01				2.76	1.06	0.023		
BCD5410	240.90	242.40	1.50	1.10	0.35	0.08	1090	2.60	0.54	0.12				2.86	31.79	0.076		
BCD5411	242.40	243.70	1.30	0.13	0.36	0.09	32	0.06	0.01	0.01				2.98	0.93	0.002		
BCD5412	243.70	245.20	1.50	2.25	3.54	0.60	561	1.16	0.01	0.01				2.89	16.36	0.034		
BCD5413	245.20	246.60	1.40	0.27	4.14	2.72	292	0.62	0.10	0.01				2.92	8.52	0.018		
BCD5414	246.60	248.10	1.50	0.18	1.92	1.24	146	0.50	0.04	0.01				2.84	4.26	0.015		
BCD5415	248.10	249.60	1.50	0.13	0.82	0.51	77.8	0.39	0.01	0.01				2.98	2.27	0.011		
BCD5416	249.60	251.10	1.50	0.05	0.36	0.08	10.2	0.04	0.01	0.01				2.76	0.30	0.001		
BCD5417	251.10	252.80	1.70	0.24	0.60	0.18	92.6	0.06	0.12	0.02				2.81	2.70	0.002		
BCD5418	252.80	254.30	1.50				3.1	0.10			62	112	130					
BCD5419	261.60	263.00	1.40	0.13	0.46	0.17	42.2	0.71						2.99	1.23	0.021		
BCD5420	263.00	263.50	0.50	0.05	0.13	0.06	9.3	0.02						2.73	0.27	0.001		

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 577.00N
EAST: 9671.20W
ELEV: 1611.10

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

COLL. DIP: -90° 0' 0"
LENGTH OF THE HOLE: 126.90m
START DEPTH: 0.00m
FINAL DEPTH: 126.90m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: May 29, 1987
DATE COMPLETED: May 30, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
52.20	-	-88° 0'	ACID	OK		-	-	-	-	-	
93.30	-	-85° 0'	ACID	OK		-	-	-	-	-	
123.80	-	-85° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.70	CASING <OB>					
3.70 TO 83.30	MAFIC PYRO-CLASTICS <MPYRO>	Colour - medium green. Grain Size - fine grained. - Lapilli in a fine grained matrix. - Lapilli have remnant mafic phenos and vesicles. Bedding @ 19.0m ---------- Bedding @ 65.2m ----------	 45 45	- Matrix strongly chl altered. - Lapilli sericite + carb altered. - Strong flooding by qtz-carb veins + veinlets in zones 19.4 - 24.0 79.0 - 83.3	- Tr-1% dissem. py in volcs. - Occasional py veinlet. 61.0 - 61.5 Quartz vein with 2% py dissem., 1% Tet dissem. 66.7 - 67.2 Quartz vein with 1% dissem. cpy, 1% Tet dissem. 78.4 - 79.0 Quartz vein with 1-2% sphal, 1% cpy, 2% galena, 1% tet.	
83.30 TO 93.00	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. - Well laminated mafic tuff with grey-green chert beds + frags. - Occasional argillite band. Bedding @ 86.3m ----------	 50	- Mafic tuff strongly sericite altered. - Some silicification. - Occasional milky white quartz vein.	5-8% dissem. py.	Moderate fault zone with clay gouge and quartz veins {91.7 - 92.0} <FLT>
93.00 TO 99.50	QUARTZITE <QITE>	Colour - light grey. Grain Size - medium grained. Massive unit with a silicified matrix and equigranular quartz grains.		Some silicification.	- Tr-1% dissem. py. - Occasional quartz veinlet.	
99.50 TO 102.10	ARGILLITE <ARG>	Colour - black. Grain Size - fine grained. Well laminated argillite bands with some quartzite beds. Bedding @ ----------	 30 - 60	Some silicification by milky quartz veins.	Avg. 5% dissem. py.	

FR. TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
102.10 TO 123.80	MAFIC TUFF + QUARTZITE <SERT+QITE>	Colour - light green. Grain Size - fine - medium grained. Laminated mafic tuff mixed with quartzite + separate quartzite beds. - 3-5cm beds of pyrite and fragments. Bedding @ 115.5m ----------	50	Mafic tuff intensely sericite altered. - Some silicification by quartz veins.	<20% py> 20% py as beds + fragments 103.5 - 105.9 Milky white quartz vein with 5% py, tr tet. 108.1 - 110.3 Milky quartz vein with 2-3% sphal, 1-2% cpy, 1% tet. 110.3 - 110.9 1% Sphal, in quartz veins. 110.9 - 111.1 60% Sulphides, 20% tet, 5% sphal, 35% py banded. 111.1 - 111.6 Quartz vein with silicified quartzite with 5% tet, 5% sphal, 2% galena. 111.6 - 117.4 10% milky quartz veins, 30% py. 117.4 - 118.9 Milky quartz vein with 5% py, tr-1% tet.	
123.80 TO 126.90	ARGILLITE + MUDSTONE <ARG+MUD>	Colour - black. Grain Size - fine-medium grained. Fine beds of argillite and mudstone. Well laminated. Bedding @ ----------	45 - 55	Some silicification.	- Avg. 5% dissem. py. - Occasional crystal of pyhrotite.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5251	61.00	61.50	0.50	0.01	0.03	0.03	2.1	0.01	0.04	0.01				2.82	0.06	0.001	
BCD5252	66.70	67.20	0.50	0.07	0.12	0.25	4.6	0.02	0.02	0.01				2.80	0.13	0.001	
BCD5253	78.40	79.00	0.60	0.00	0.02	0.01	1.3	0.12	0.01	0.06				2.89	0.04	0.004	
BCD5254	102.10	103.50	1.40				8	0.06			380	9200	5800				
BCD5255	103.50	104.90	1.40	0.00	0.02	0.02	0.4	0.15	0.01	0.01				2.71	0.01	0.004	
BCD5256	104.90	106.40	1.50				1.4	0.11			56	62	28				
BCD5257	106.40	108.10	1.70				1.6	0.05			74	115	59				
BCD5258	108.10	109.20	1.10	0.12	0.63	0.12	15.8	0.10	0.01	0.04				2.73	0.46	0.003	
BCD5259	109.20	110.30	1.10	0.12	0.18	0.03	18	0.04	0.02	0.01				2.71	0.53	0.001	
BCD5260	110.30	110.90	0.60	0.12	0.61	0.28	117	0.27	0.06	0.05					3.41	0.008	
BCD5261	110.90	112.40	1.50	0.99	4.52	2.27	1195	2.03	0.59	0.12				3.07	34.85	0.059	
BCD5271	111.40	112.90	1.50				16.8	0.06			174	620	420				
BCD5262	117.40	118.90	1.50	0.01	0.02	0.02	2.6	0.20	0.02	0.01				2.92	0.08	0.006	

MINNOVA INC.

HOLE ?: RG124 DRILL HOLE RECORD IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 577.00N
EAST: 9671.20W
ELEV: 1611.10

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

COLLAR DIP: -68° 0' 0"
LENGTH OF THE HOLE: 130.20m
START DEPTH: 0.00m
FINAL DEPTH: 130.20m

COLLAR GRID AZIMUTH: 180° 0' 0"

COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 1, 1987
DATE COMPLETED: June 2, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
26.50	-	-66° 0'	ACID	OK		-	-	-	-	-	
121.00	-	-63° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.10	CASING <OB>					
3.10 TO 68.90	MAFIC PYRO-CLASTICS <MPYRO>	Colour - medium green. Grain Size - fine grained. Fine grained matrix with lapilli. - rounded and flattened lapilli with altered mafic phenocrysts + quartz filled vesicles. - Occasional leucoxene crystal. Bedding @ 12m ---------- Bedding @ 62m ----------	 70 80	- Matrix chl altered with lapilli sericite +/-carb altered. - Some silicification 3% milky white quartz veins + some qtz-carb veinlets + alteration. - @ 58.0 - 68.9 sericite alteration and silicification intensifies.	{3.3 - 3.6} <5% py> Milk quartz vein with gash veins + 1% Tet, tr cpy. Units avg. 5% dissem. py. Occasional 5cm milky quartz vein with 1% cpy. {44.5 - 44.9} <tr tet> Milky quartz vein with tr tet. 46.4 - 46.7 Quartz vein with 10% Sp, 3% cpy, 1% tet 49.5 - 50.2 Quartz vein with carb tr tet, tr gal. 56.1 - 56.5 Quartz vein with carb alteration, 3% gal, 1% cpy, 1% tet. 68.7 - 68.8 Quartz vein with 10% gal, 10% copy, tr tet.	Fault with clay gouge 45.9 - 46.0 Fault with clay + qtz gouge {57.3 - 57.7} <FLT> Fault with broken rich 58.7 - 59.4. {45.9-46.0} <FLT> {58.7-59.4} <FLT>
68.90 TO 74.90	MAFIC WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. - Finely laminated mafic tuff with chert beds and angular chert frags. - 71.5 - 71.9 Argillite forms the matrix. Bedding @ 74m ----------	 70	Some silicification. - Mafic tuff strongly sericite altered.	<8% py> 8% dissem. py.	Fault Zone with clay gouge {71.8 - 71.9} <FLT>
74.90 TO 108.50	ARGILLITE WITH MINOR QUARTZITE <ARG+QITE>	Colour - black. Grain Size - fine-medium grained. Well bedded argillite with 10% quartzite beds. Bedding @ 77m ---------- 86.5 - 90.4 Unit dominantly quartzite. - Occasional mudstone bed. - Some soft sed. deformation in beds (i.e. slumping).	 70	Some quartz-carb. veins.	<5% py> Avg. 5% dissem. py in the beds. 87.8 - 88.2 Dissem. sp in quartzite .5%.	Fault zone with clay gouge. {85.2 - 86.6} <FLT> - Some argillite has weakly conductive graphite.

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5263	43.00	44.50	1.50				2.4	0.03	0.02	0.02	62	146	152				
BCD5264	44.50	44.90	0.40	0.00	0.03	0.03	1.9	0.01	0.04	0.02				2.84	0.06	0.001	
BCD5265	44.90	46.40	1.50				1.9	0.02			178	3000	5800				
BCD5266	49.50	50.20	0.70	0.01	0.05	0.03	1.8	0.01	0.02	0.01				2.91	0.05	0.001	
BCD5267	56.10	56.50	0.40	0.04	0.16	0.14	2.4	0.02	0.04	0.02				2.89	0.07	0.001	
BCD5268	67.50	68.80	1.30	0.10	0.28	0.16	4	0.05	0.01	0.01				2.98	0.12	0.001	
BCD5269	108.50	110.00	1.50				0.8	0.01			21	65	24				
BCD5270	110.00	111.00	1.00				0.4	0.01			48	47	16				

MINNOVA INC.

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 653.30N
EAST: 9526.00W
ELEV: 1681.40

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

COLLAR DIP: -85° 0' 0"
LENGTH OF THE HOLE: 215.50m
START DEPTH: 0.00m
FINAL DEPTH: 215.50m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 1, 1987
DATE COMPLETED: June 3, 1987
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: YES

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
62.50	-	-83° 0'	ACID	OK		-	-	-	-	-	
130.10	-	-82° 0'	ACID	OK		-	-	-	-	-	
191.10	-	-83° 0'	ACID	OK		-	-	-	-	-	
215.50	-	-79° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.40	CASING <OB>					
3.40 TO 195.20	MAFIC PYRO-CLASTICS <MPYRO>	Colour - medium green Grain Size - fine grained. - A fine grained matrix with rounded and flattened lapilli with 10% leucoxene. - Lapilli monolithic with occasional mafic pheno + qtz filled vesicle. Bedding @ 5.2m ---------- Bedding @ 30m ---------- Bedding @ 48m ---------- Bedding @ 75m ---------- Bedding @ 102m ---------- Bedding @ 124m ---------- 139.3 - 177.7 A fine grained tuffaceous or flow unit with quartz-carb vesicles? massive with only occasional lapilli.	40 45 45 45 45 45	Matrix chl altered. Lapilli sericite and carb. altered. 2-3% Qtz-Carb veinlets. 64.5 - 81.3 A carb alteration zone with increased sericite. 139.3 - 182.0 Qtz-Carb alteration increases steadily, 30-40% vol. {182.0 - 195.2} <carb + ser> Carb. + Sericite alteration increases strongly with quartz-carb. knots.	1% dissem. py. 64.5 - 66.8 Qtz Carb. veinlets with carb. alteration carry Gal, Sp, Cpy. Avg. over interval, 1-2% gal, 1% sp, tr cpy. 69.5 - 70.1 A mottled vein breccia with sericite + fuchsite alteration contains 2% gal, 10% py, tr sp. 73.0 - 75.4 Qtz-Carb. vein with sericite + fuchsite? alteration, 1% gal, 15% py, tr sphal, tr cpy. 79.20 - 87.0 Occasional 5cm quartz vein with 5% cpy, 2% gal, 2% sp, 1% tet.	Fault zone with clay gouge. {19.3 - 20.2} <FLT> Weak fault zone {33.9 - 34.2} <FLT> Strong fault with clay gouge + qtz chips {174.2 - 174.3} <FLT> Fault zone with clay gouge + broken rock {189.5 - 189.9} <FLT>
195.20 TO 207.80	CHERT WITH MAFIC TUFF <CHT+SERT>	Colour - light grey - green. Grain Size - aphanitic to fine grained. - A chert matrix with wisps of mafic tuff + + occasional chert breccia. - Occasional laminations and frags of argillite. - Chert frags average 1-2cm. Bedding @ 200m ----------	45	Mafic tuff intensely sericite altered.	Avg. 15%. Silicified zones + dissem. avg. 2% lt. sp, 15 gal, tr tet.	Fault with clay gouge 195.2 - 195.3m.
207.80 TO 215.50	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. A pyritic muddy matrix with 40% fine grained pyrite with frags (round) and beds of chert and round frags of pyrite. - frags .5 - 2.0cm - matrix finely laminated		Some milky quartz veins.	<10% py> Avg. 40% fine grained dissem. py. 207.8 - 208.3 50% py with 2-3% lt. sphal dissem.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t		MENTS
BCD5376	64.50	66.80	2.30	0.02	0.13	0.10	1.9	0.01						3.01				
BCD5377	69.50	70.10	0.60	0.01	0.11	0.10	2.1	0.01						3.03				
BCD5378	73.00	75.40	2.40	0.01	0.04	0.09	2.4	0.04						3.16				
BCD5379	195.20	196.70	1.50	0.03	0.44	0.34	4	0.01						2.91				
BCD5380	196.70	198.20	1.50	0.01	0.06	0.02	0.2	0.01						2.94				
BCD5381	198.20	199.70	1.50	0.01	0.01	0.01	0.2	0.02						2.92				
BCD5382	199.70	201.20	1.50	0.01	0.02	0.01	0.3	0.01						2.96				
BCD5383	201.20	202.70	1.50	0.01	0.01	0.01	0.2	0.02						2.99				
BCD5384	202.70	204.20	1.50	0.04	0.18	0.20	8.2	0.03						2.96				
BCD5385	204.20	205.70	1.50	0.01	0.08	0.01	0.2	0.01						2.91				
BCD5386	205.70	207.80	2.10	0.01	0.02	0.01	0.3	0.02						2.91				
BCD5387	207.80	208.30	0.50	0.03	0.38	0.18	10.2	0.02						3.09				

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 554.90N
EAST: 9757.30W
ELEV: 1556.90

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 69.20m
START DEPTH: 0.00m
FINAL DEPTH: 69.20m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 2, 1987
DATE COMPLETED: June 4, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
44.20	-	-87° 0'	ACID	OK		-	-	-	-	-	
69.00	-	-86° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 3.10	CASING <OB>					
3.10 TO 31.10	MAFIC PYRO-CLASTICS <MPYRO>	Colour - medium green. Grain Size - fine grained. - A fine grained matrix with rounded and flattened lapilli. - Lapilli leucoxene rich (20%) with remnant mafic phenocrysts and quartz filled vesicles. Bedding @ 11m ---------- Bedding @ 29.3m ----------	 40 45	Matrix chl altered white vesicles sericite +/- carb altered. - Sericite alteration becomes more intense with fuchsite? 29.3 - 31.1 - Some quartz veins milky white.	<1-2% py> Avg. 1-2% dissem. py.	
31.10 TO 47.90	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. - Finely laminated mafic tuff with fine chert beds. - Occasionally a chert breccia unit with ang. frags. Bedding parallel wilth foliation @ 35m --------	 50	- Mafic tuff intensely sericite altered - Some silicification by quartz veins +/-carb. - Occasional chert breccia unit with ang. frags of chert.	<10% py> Unit avgs. 10% dissem. py approx. 10%. 46.8 - 47.4 10% quartz veins with 1% sphal, tr tet. 31.4 - 31.8 Quartz vein with 30% py, 2% sphal, 1% tet. 36.3 - 36.7 Quartz vein with 20% py, 8% sphal, 8% tet.	Strong faults with clay gouge. {38.8 - 39.1} <FLT> {40.9 - 41.3} <FLT> {41.7 - 41.9} <FLT> {44.1 - 44.4} <FLT>
47.90 TO 48.20	MASSIVE SULPHIDES <MS>	Colour - metallic brown. Grain Size - fine grained. - 80% py in a silicified matrix. - Py fine grained in bands + blebs.		Silicified.	80% py, 2% cpy, 1% tet, tr sp.	
48.20 TO 67.20	MUDSTONE <MUD>	Colour - light brown - light green. Grain Size - fine grained. - Well bedded mudstone. - Occasional quartzite unit. Bedding @ 51.2m ----------	 45	Some silicification and clay alteration around faults.	<5% py> Avg. 5% dissem. py 59.6 - 60.7 Quartz vein with 5% py dissem, 1% cpy dissem, 1% tet dissem. with barite + talc?	Faults with clay gouge @ {49.0 - 49.1} <FLT> {56.4 - 56.5} <FLT> A strong fault with clay gouge and quartz veins {57.9 - 62.4} <FLT>

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
67.20 TO 69.20	MUDDY TUFF <MUT>	Colour - black. Grain Size - fine grained. - An argillite matrix with minor chert beds and frags. - A mottled appearance due to coarser grains of quartz and feldspar? Bedding @ 68m ----------	45	Some quartz carb. veins.	<10% py> 10% py dissem. + bands.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	MENTS
BCD5276	31.40	31.80	0.40	0.13	0.68	0.69	18.6	0.24	0.01	0.04				3.05	0.54	0.007	
BCD5277	34.80	36.30	1.50				1.4	0.03			24	68	320				
BCD5278	36.30	36.70	0.40	0.11	1.93	1.30	76	0.22	0.02	0.02				2.96	2.22	0.006	
BCD5279	36.70	38.20	1.50				1.8	0.03			200	140	175				
BCD5280	46.40	47.90	1.50				4.1	0.04			245	680	325				
BCD5281	47.90	48.20	0.30	1.32	3.34	1.63	1690	4.62	0.70	0.06				3.94	49.29	0.135	
BCD5282	48.20	49.70	1.50				8	0.07			170	570	180				
BCD5283	59.60	60.70	1.10	0.06	0.03	0.01	8.2	0.19	0.02	0.01				2.76	0.24	0.006	

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 665.40N
EAST: 9570.50W
ELEV: 1697.20

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

COLLAR DIP: -70° 0' 0"
LENGTH OF THE HOLE: 214.60m
START DEPTH: 0.00m
FINAL DEPTH: 214.60m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 3, 1987
DATE COMPLETED: June 5, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
63.20	-	-70° 0'	ACID	OK		-	-	-	-	-	
121.30	-	-69° 0'	ACID	OK		-	-	-	-	-	
182.00	-	-68° 0'	ACID	OK		-	-	-	-	-	
214.60	207° 0'	-68° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 185.30	MAFIC PYRO-CLASTICS <MPYRO>					
185.30 TO 214.60	"MUDDY TUFF" <MUT>	Colour - dark grey. Grain Size - fine grained. 185.3 - 187.1 Finely laminated pyritic mud (50% syng. py). Bedding @ 185.5m ---------- 187.1 - 213.0 Becomes more cherty with pyritic mud avg. 25% with round rags 1-2cm of chert + pyrite. Bedding @ 200m ---------- Bedding @ 212m ---------- {213.0 - 214.6} <50% py> Back to finely laminated argillite-pyritic (50% syng. py).	45 65 60	Some silicified zones.	186.5 - 188.0 1-2% light dissem. sp., tr dissem tet, tr gal in Quartz vein. 194.2 - 197.5 1-2% dissem. lt. sp, .5% tet dissem, found in 1-2cm silicified zones. 206.6 - 208.1 Silicified zones carry mineralization, 1-2% lt. sp., tr tet.	Strong fault with clay gouge broken rock + quartz veinlets. {211.2 - 212.6} <FLT>

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t		COMMENTS
BCD5440	186.50	188.00	1.50				17.3	0.01			320	3600	1440					
BCD5441	194.20	195.70	1.50				19	0.32			540	2600	1750					
BCD5442	195.70	197.50	1.80				24	0.25			225	890	780					
BCD5443	201.70	202.00	0.30	0.04	1.39	0.94	38.2	0.96										
BCD5444	206.60	208.10	1.50				30	0.20			305	3650	1160					

PROJECT NAME: SAM
PROJECT NUMBER: 233
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 572.30N
EAST: 9809.90W
ELEV: 1549.60

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 55.50m
START DEPTH: 0.00m
FINAL DEPTH: 55.50m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 4, 1997
DATE COMPLETED: June 5, 1997
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G&D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
36.60	-	-88° 0'	ACID	OK		-	-	-	-	-	
55.50	-	-87° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 6.10	CASING <OB>					
6.10 TO 20.10	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. - Finely laminated mafic tuff with chert beds + frags. - Frags flattened parallel to bedding and are 1-4cm and are rounded. Bedding parallel with foliation @ 7m and @ 20m.	 50 50	Hem. on fract. 6.1 - 8.4. Intense sericite alteration of the mafic tuff.	<10% py> Avg. 10% dissem. py with occasional py stringer +/-chl alteration.	Moderate faulting with clay gouge {13.8 - 14.0} <FLT>
20.10 TO 24.40	QUARTZ VEIN WITH "SILVER ZONE" <QV+AG Z>	Colour - white - grey. Grain Size - fine grained - aphanitic. Hosted in mafic tuff + chert A milky white quartz vein 20.1 - 23.8 50% quartz vein.		- Sericite alteration on fract. - Minor silicification.	20.1 - 23.8 5% dissem. py, tr tet. {23.8 - 24.4} <silver zone> Vein appears as altered quartzite 20% py as bands, 15% tet dissem, 12% sphal dissem, 4-5% galena, 2-3% cpy.	
24.40 TO 34.70	QUARTZITE WITH MAFIC TUFF <QITE+SERT>	Colour - light green. Grain Size - medium grained - Generally a quartzite with varying amounts of mafic tuff in the matrix. - Occasionally a fine grained tuff bed. - Quartz grains 1-3mm in dia. Bedding @ 29.5m ---------- Bedding @ 41.0m ----------	 45 40	- Intense sericite alteration. - Quartz veins 25% 32.8 - 34.7 Quartz vein + quartzite green with a mica (fuchsite).	Avg. 5% dissem. py.	
34.70 TO 48.00	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. Fine grained mafic tuff with chert beds + frags + occasional py bd. - Chert frags 1-5cm sub angular. Bedding @ 35m ---------- Bedding @ 46m ----------	 45 50	Mafic tuff intensely sericite altered (sometimes actually a brown colour). - Some fractures have talc on them.	34.7 - 40.2 Avgs. 10% dissem. py. 40.2 - 48.0 30% py in the matrix. 38.8 - 40.3 Quartz vein with 5% py, tr-1% tet, tr sphal.	{37.3 - 38.8} <FLT> Strong fault zone with clay gouge and quartz chips.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
48.00 TO 55.50	"MUDDY TUFF" <MUT>	Colour - grey. Grain Size - fine grained - aphanitic. Finely laminated chert with 10% argillite matrix. (N.B. maybe a chert breccia). - Highly contorted beds by soft sed. deformation (slumping) fine grained beds of py, chert + argillite. - Fragment 5mm - 3cm often angular. Bedding @ 48.5m ---------- Bedding @ 52.5m ---------- END OF HOLE	 45 10		15% fine grained syngenetic pyrite as beds + frags.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5293	19.60	20.10	1.50				0.6	0.32			46	54	25				
BCD5294	20.10	21.60	1.50	0.01	0.01	0.01	2.2	0.11						2.79	0.06	0.013	
BCD5295	21.60	22.60	1.00	0.10	0.16	0.12	70.4	0.08	0.05	0.07				2.78	2.05	0.002	
AVERAGES	22.60	24.40	1.80	0.75	1.52	1.13	550.7	0.79						2.95	16.10	0.023	
BCD5296	22.60	23.80	1.20	0.28	0.29	0.18	218.5	0.23	0.16	0.01				2.86	6.37	0.007	
BCD5297	23.80	24.40	0.60	1.71	4.27	3.02	1215	1.90	1.06	0.22				3.13	35.44	0.055	
BCD5298	24.40	25.90	1.50				2.3	0.04			38	62	67				
BCD5299	32.80	34.70	1.90	0.02	0.01	0.02	4.1	0.02						2.84	0.12	0.001	
BCD5300	38.80	40.30	1.50	0.01	0.01	0.01	17.6	0.01						2.69	0.51	0.001	

HO' BER: RG129

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 232
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 698.30N
EAST: 10054.70W
ELEV: 1475.10

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 114.60m
START DEPTH: 0.00m
FINAL DEPTH: 114.60m

COLLAR GRID AZIMUTH: 180° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 20, 1987
DATE COMPLETED: June 4, 1987
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: YES

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
65.80	-	-87° 0'	ACID	OK		-	-	-	-	-	
109.50	-	-85° 0'	ACID	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 9.75	CASING <OB>					
9.75 TO 10.30	MAFIC TUFF <SERT>	Colour - medium green. Grain Size - fine grained Fine grained tuff with quartz veins, milky white		Tuff is sericite altered moderately.	Tr pyrite. Quartz veins have 5% py.	N.B. maybe a boulder?
10.30 TO 67.00	ARGILLITE + MUDSTONE <ARG+MUD>	Colour - black to grey. Grain Size - fine grained Well bedded sediments with black argillite interbedded with buff mudstone. Bedding angles change drastically but no slump breccia (fold or channel?) (little foliation). Soft sed. features include slumping, flame structures (tops down hole!). - Occasional greywacke bed.		- Occasional quartz vein +/-carb.	1-2% dissem. py.	Some graphitic argillite weakly conductive. Faults with graphite gouge 42.5 - 42.6 <FLT> 61.3 - 61.4 <FLT>
		Bedding @ 24m ----------------------------------	10			
		Bedding @ 35m ----------------------------------	45			
		Bedding @ 46m ----------------------------------	70			
		Bedding @ 50m ----------------------------------	30			
		Bedding @ 57m ----------------------------------	10			
		Bedding @ 60m ----------------------------------	50			
67.00 TO 105.90	MAFIC TUFF + QUARTZITE <SERT+QITE>	Colour - light green. Grain Size - very fine grained. A very fine grained mafic tuff. - Well bedded with some beds containing 30% leucoxene crystals.		- Occasional 5cm milky quartz vein with carb. - Tuff is moderately sericite altered.	- Avg. 8% dissem. + occasional frag of py.	
		Bedding @ 67m ----------------------------------	45			
		71.7 - 81.9 A large late stage quartz vein crosscuts the tuff unit. - Milky white. - Contains frags + zones of mafic tuff (10%). 88.5 - 105.9 Rock is better described as a quartzite with a mafic tuff component.		Quartz veins increase 68.7 - 71.7 25% of rock.	5% dissem. py 79.2 - 83.7 <40% py> 40% coarse zones of py tr tet, + fuchsite? (green mica). 83.7 - 84.9 10% dissem. py.	Intense fault with clay + graphite gouge with quartz chips. 75.0 -80.7 60% recovery.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
105.90 TO 113.50	"MUDDY TUFF" <MUT>	Colour - black. Grain Size - fine grained. - A slump breccia with an argillite matrix with beds + frags of chert + mudstone. - Frags 1-5cm and are rounded - sub angular. Bedding @ 107m ---------- Bedding @ 113m ----------	 40 45	Some silicification by quartz veins.	1% dissem. py.	
113.50 TO 114.60	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained. - A mafic tuff with frags of chert + occasional argillite. - Frags of chert 1-3cm and are rounded. Bedding @ 114.5m ----------	 45	Tuff is strongly sericite altered.	Tr. pyrite.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5284	71.70	73.20	1.50				1.2	0.16			18	23	20				
BCD5285	73.20	74.70	1.50				1	0.14			16	41	40				
BCD5286	74.70	76.20	1.50				0.8	0.11			22	152	18				
BCD5287	76.20	77.70	1.50				0.6	0.04			14	138	15				
BCD5288	77.70	79.20	1.50				3.2	0.18			100	180	220				
BCD5289	79.20	80.70	1.50	0.02	0.07	0.03	3.9	0.21	0.01	0.02				2.99	0.11	0.006	
BCD5290	80.70	82.20	1.50	0.01	0.03	0.02	3.8	0.26	0.02	0.03				3.40	0.11	0.008	
BCD5291	82.20	83.70	1.50	0.03	0.06	0.02	4.3	0.06	0.01	0.01				3.01	0.13	0.002	
BCD5292	83.70	85.20	1.50				1.4	0.03			19	59	53				

MINNOVA INC.
HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 672.60N
EAST: 9636.60W
ELEV: 1561.85

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

COLLAR DIP: -68° 0' 0"
LENGTH OF THE HOLE: 212.50m
START DEPTH: 0.00m
FINAL DEPTH: 212.50m

COLLAR GRID AZIMUTH: 180° 0' 0"

COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 6, 1987
DATE COMPLETED: June 8, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: 10'LIH
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
46.60	-	-66° 0'	ACID	OK		-	-	-	-	-	
157.60	-	-64° 0'	ACID	OK		-	-	-	-	-	
163.70	-	-64° 0'	ACID	OK		-	-	-	-	-	
211.30	-	-62° 0'	ACID	OK		-	-	-	-	-	
151.50	220° 0'	-65° 0'	TRO-PARI	OK		-	-	-	-	-	
212.40	214° 0'	-62° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 177.20	MAFIC PYRO-CLASTICS <MPYRO>					
177.20 TO 193.10	MAFIC TUFF <SERT>	Colour - light green. Grain Size - fine grained. - A well laminated mafic tuff with beds of mudstone + occasional round syng. py frag + bed. 179.0 - 179.5 A thin bed of muddy tuff with an argillite-pyrite matrix. - Some minor chert frags 177.2 - 179.0 rounded 1-2cm. Bedding @ 178m ---------- Bedding @ 187m ----------	 65 70	- Mafic tuff intensely sericite altered. - 8-10% milky white quartz veins.	<10-15% py> Avg. 10-15% py as frags. 185.2 - 185.7 Quartz vein in mafic tuff has 30% coarse gal, 20% coarse blebs of cpy, 5% blebs tet.	Fault with clay gouge 190.0 - 190.3. {190.0-190.3} <FLT>
193.10 TO 195.90	QUARTZ VEIN "SILVER ZONE" <QV+SUL>	Colour - milky white. Grain Size - aphanitic. A milky white quartz vein with a mottled texture (quartzite host?). - Occasional vugs with quartz crystals.		Intense silicification + sericite alteration to quartzite? - Some carb. zones.	193.1 - 195.8 Avg. 2-3% blebs of tet with 1% dissem. cpy, 1-2% dissem. py. 195.8 - 195.9 Coarse blackjack blebs sp 10%, coarse tet blebs 10%, coarse tet blebs 10%, dissem. + bleb cpy 10%, coarse py blebs 10%.	
195.90 TO 205.70	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. A well laminated pyritic mud matrix with chert beds + frags rounded .5-4cm. Bedding @ 198m ---------- Foliation parallel @ 205m ----------	 70 70	Some silicified zones.	<40% py> 195.9 - 199.3 40% fine grained dissem. + laminated py (syng.) 6-8% laminated sp (lt) in silicified zones. 2-3% dissem. cpy, 1-2% tet with sp in silicified zones, tr - 1% gal in milky quartz veinlets. 199.3 - 202.9 Tr dissem. sp lt., tr-1% gal in quartz veinlets, 40% py dissem. + laminated. 202.9 - 205.7 30% fine grained py dissem. + laminated.	Fault Zones with clay + broken rock. 197.3 - 197.7 198.3 - 198.7 200.3 - 201.5 202.8 - 203.0 203.6 - 203.7

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
205.70 TO 209.50	MUDSTONE + ARGILLITE <MUD+ARG>	Colour - medium grey - medium brown. Grain Size - fine grained. - Mixture of well laminated mudstone, argillite, + wackes. - Some mafic tuff component. - Some cross-bedding suggests tops downhole. Bedding @ 207m ----------	70	Sericite alteration to mafic tuff component.	Avg. 1% dissem. py.	
209.50 TO 212.50	CHERT BRECCIA <CHT BX>	Colour - light grey. Grain Size - aphanitic. - Lt. grey, laminated chert frags (.5-4cm angular frags) in a pyritic - argillitic matrix. - A slump breccia.		Some milky white quartz veins.	<15% py> Avg. 15% py in the matrix.	N.B. Almost a "Muddy Tuff" {209.5 - 211.1} <FLT> Strong fault zone with clay + broken rock.

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5476	183.70	185.20	1.50				20	0.10			1100	83	3900				
BCD5477	185.20	185.70	0.50	4.82	2.52	25.20	1600	2.22						4.17	46.67	0.065	
BCD5478	185.70	187.20	1.50				30	0.10			920	112	1110				
BCD5479	191.60	193.10	1.50				6.5	0.07			118	98	205				
BCD5480	193.10	194.60	1.50	0.01	0.02	0.02	2	0.09						2.69	0.06	0.003	
AVERAGES	194.60	199.30	4.70	0.71	2.03	0.95	456.4	1.25						3.03	13.30	0.036	
BCD5481	194.60	195.90	1.30	0.50	0.72	0.04	298	0.36						2.86	8.69	0.011	
BCD5482	195.90	197.40	1.50	0.40	1.40	0.24	285	0.75						3.14	8.31	0.022	
BCD5483	197.40	199.30	1.90	1.10	3.43	2.14	700	2.25						3.07	20.42	0.066	
BCD5484	199.30	201.10	1.80				145	0.61			1950	4250	4500		4.23		
BCD5485	201.10	202.90	1.80				49	0.29			1040	2500	1610				

INNOVA INC.
HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 698.30N
EAST: 10964.70W
ELEV: 1475.10

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 96.90m
START DEPTH: 0.00m
FINAL DEPTH: 96.90m

COLLAR GRID AZIMUTH: 180° 0' 0"

COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 6, 1987
DATE COMPLETED: June 7, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
16.20	-	-53° 0'	ACID	OK		-	-	-	-	-	
50.00	-	-54° 0'	ACID	OK		-	-	-	-	-	
96.90	-	-55° 0'	ACID	OK		-	-	-	-	-	
95.40	217° 0'	-56° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 9.10	CASING <OB>					
9.10 TO 52.70	ARGILLITE <ARG>	Colour - black. Grain Size -fine grained. - Well bedded argillite with 10% medium grained wackes .5-1.0m beds. - Also some thin wacke beds 1-3cm. - Beds sometimes contorted with soft sed. deformation. Bedding @ 25m ---------- Bedding @ 37m ---------- Bedding @ 48m ----------	 65 45 45	Occasional quartz veinlet.	Tr dissem. py.	Top of hole is very broken hematite on fract. to 38.6. fract with graph. mod. cond Weak fault with some clay + rock 36.0 - 36.2.
52.70 TO 56.40	QUARTZITE <QITE>	Colour - light grey. Grain Size - medium grained. - Quartzite - Wacke 80% equigranular quartz grains .5mm with biotite + feldspars in the matrix. - A massive rock with occasional argillite unit.			Tr py.	
56.40 TO 64.60	MAFIC TUFF WITH ARGILLITE <SERT+ARG>	Colour - light green - black. Grain Size - fine grained. 56.4 - 57.5 Argillite 57.5 - 64.6 Dominantly fine grained mafic tuff. - Fine grained well laminated mafic tuff with occasional py frags. Bedding @ 56.5m ---------- Bedding @ 60.0m ---------- Bedding @ 64.0m ----------	 45 60 70	Mafic tuff intensely sericite altered. 20% milky quartz veins.	<15% py> Avg. 15% py as dissem. and occasional frag in the mafic tuff. 58.2 - 58.5 1% cpy in quartz vein 61.0 - 61.1 3% B.J. Sphal in quartz vein.	Fault with clay gouge + qua 57.4 - 57.5 <FLT> Fault with clay gouge. 59.9 - 60.6 <FLT> 61.0 - 64.6 <FLT> 50% recovery.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
64.60 TO 68.00	CHERT <CHT>	Colour - light grey. Grain Size - aphanitic. Massive chert bed with 20% milky quartz veins.		Some silicification.	<5% py> 5% py in chert. Galena in quartz veins as blebs avg. 1-2% Tet. in silicified chert as stringers + dissem. 1-2%.	
68.00 TO 79.00	CHERT WITH MAFIC TUFF <CHT+SERT>	Colour - light green. Grain Size - fine grained to aphanitic. - Chert with fine laminations of mafic tuff. - 10% milky quartz veins. - Occasional argillite bed. - 10% leucoxene in mafic tuff. Bedding @ 70m ---------- Bedding @ 75m ----------	 50 45	- Some silicification by quartz veins. - Mafic tuff intensely sericite altered - Some green mica (fuchsite) zones + minor talc on fract.	Zone avgs. 30% pyrite dissem. + finely laminated tr-1% dissem. sphal, tr dissem. tet. 73.7 - 74.2 Quartz vein with 20% blebs of py. 5% sphal (lt) dissem., 3% galena (dissem), 2% Tet (dissem).	
79.00 TO 93.00	"MUDDY TUFF" <MUT>	Colour - black. Grain Size - fine grained to aphanitic. - A slump breccia with an argillite matrix containing frags of chert, mafic tuff and pyrite. - Beds contorted by soft sed. deformation. - Argilllite matrix is quite "cherty". - Frags 1-4cm subangular. Bedding @ 81m ---------- Bedding @ 90m ----------	 70 75	- Mafic tuff strongly sericite altered. - Occasional 1-3cm milky quartz vein.	Avg. 15-20% py dissem. in matrix.	Fault with clay gouge + quartz veins 80.5 - 80.8.
93.00 TO 96.90	MAFIC TUFF WITH CHERT	Colour - light green. Grain Size - fine grained to aphanitic. - Finely laminated mafic tuff with chert beds + frags. - Gradational contact with Muddy Tuff. - Frags of chert .5-2cm rounded. - Beds have slumping indicate tops up hole. Bedding @ 94m ----------	 80	Mafic tuff strongly sericite altered.	10% dissem. py.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5301	59.60	61.10	1.50				2	0.48			123	78	19				
BCD5302	61.10	62.60	1.50				10.4	0.05			295	137	180				
BCD5303	62.60	64.60	2.00				310	0.65			3150	800	2000		9.00	0.019	
BCD5304	64.60	66.30	1.70	0.02	0.14	0.62	40.4	0.22						2.82	1.18	0.006	
BCD5305	66.30	68.00	1.70	0.01	0.04	0.14	4.1	0.02						2.87	0.12	0.001	
BCD5306	68.00	69.50	1.50				6.2	0.08			290	1820	620				
BCD5307	69.50	71.00	1.50				2.4	0.03			50	920	52				
BCD5308	71.00	72.50	1.50	0.01	0.04	0.01	2.2	0.03						3.05	0.06	0.001	
BCD5309	72.50	73.70	1.20				2.1	0.01			38	140	34				
BCD5310	73.70	74.20	0.50	0.03	1.00	0.74	48	0.40						2.96	1.40	0.012	
BCD5311	74.20	75.70	1.50				1.8	0.03			36	1850	32				
BCD5312	75.70	77.20	1.50				2.3	0.04			39	80	160				
BCD5313	77.20	79.00	1.80				2	0.04			35	102	92				

INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 003
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 672.40N
EAST: 9636.60W
ELEV: 1551.95

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

COLLAR DIP: -78° 0' 0"
LENGTH OF THE HOLE: 219.80m
START DEPTH: 0.00m
FINAL DEPTH: 219.80m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 9, 1987
DATE COMPLETED: June 11, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: 10' LIH
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
69.20	-	-77° 0'	ACID	OK		-	-	-	-	-	
139.30	-	-72° 0'	ACID	OK		-	-	-	-	-	
166.70	-	-71° 0'	ACID	OK		-	-	-	-	-	
154.50	219° 0'	-74° 0'	TRO-PARI	OK		-	-	-	-	-	
219.50	210° 0'	-72° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 173.70	MAFIC PYRO-CLASTICS <MPYRO>					
173.70 TO 184.60	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained-aphanitic. - Generally a fine grained massive to finely laminated mafic tuff. 180.8 - 181.0 Finely laminated chert with pyrite laminations. - 10% leucoxene in mafic tuff. - Occasional zone with angular chert frags 1-2cm. Bedding @ 180.8m ----------	90	- Mafic tuff intensely sericite altered as well as silicified. - Some green micas (fuchsite?). - 10% milky white 5cm quartz veins.	<1-2% py> 173.8 - 173.9 Bed of finely laminated py 80%. Overall avg. 1-2% py.	Strong fault zone with clay gouge and broken rock. {173.9 - 175.9} <FLT>
184.60 TO 190.10	MUDSTONE <MUD>	Colour - beige. Grain Size - fine grained. - A mudstone or fine grained wacke with a pyritic argillite matrix. - Beds are highly contorted (a slump breccia?) with large 50+ cm blocks. Bedding @ 188m ----------	80 ?	- Some silicification.	<10% py> Avg. 10% fine grained pyrite in the matrix as laminations + dissem.	
190.10 TO 192.50	QUARTZITE + "MUDDY TUFF" <QTE+MUT>	Colour - light grey - medium grey. Grain Size - medium-fine grained. A mixture of beds of sulphide rich argillite and beds of medium grained quartzite. Bedding @ 191m ----------	85	Some silicification by quartz veins.	Sulphides dominantly in "Muddy Tuff", 50% of rock. 30% finely laminated + dissem. py. 5-8% lt. sp. dissem. 2-3% cpy dissem. + blebs in quartz veins. 1+2% tet dissem. (hard to see).	Strong fault with clay gouge + broken rock. {191.2 - 192.6} <FLT>
192.50 TO 196.40	QUARTZ VEIN <QV>	Colour - milky white. Grain Size - aphanitic. Hosted in mafic tuff + quartzite. 192.5 - 194.4 only 50% silicification 194.4 - 196.4 intense silicification by quartz vein which has a mottled texture + occasionally vuggy with quartz veins.		Intense sericite alteration to mafic tuff + strong quartz flooding. Some green micas (fuchsite) and blebs of a pink mineral (barite or K-spar?).	192.5 - 194.4 Avg. 1% dissem. tet. tr dissem. cpy, 5-8% dissem. py. 194.4 - 196.4 3-4% tet blebs + dissem., 1% dissem. cpy, 3% dissem. py.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
196.40 TO 216.30	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. A gradational contact with mafic tuff and quartzite interbedded with "Muddy Tuff" 196.4 - 198.5. A fine grained pyritic - argillite matrix with 20-30% pyrite finely laminated, 198.5 - 208.0. Bedding @ 199.2m ---------- Bedding @ 205.3m ---------- Gradually becomes more chert rich with 50% grey chert frags, 208.0 - 216.3. Bedding @ 215.5m ----------	70 80 70	Mafic tuff intense sericite alteration + 20% milky quartz veins, 196.4 - 198.5. Silicified zones with mineralization, 198.5 - 208.0.	<20% py> 196.4 - 198.5 1-2% tet blebs in quartz veins, 1% cpy blebs in host rocks, 5-8% dissem. py. 198.5 - 208.0 30+% fine grained lam. + dissem. syng. pyrite, 3-5% dissem. lt. sp., 2-3% cpy blebs, 1% tet in silicified zones dissem, tr gal in silicified zones. 208.0 - 216.3 20% fine grained laminated syng. pyrite. Tr cpy, sp (lt) in rare silicified zones.	Strong faults with clay gouge + broken rock. {206.3 - 207.1} <FLT> {207.6 - 208.0} <FLT> {208.8 - 209.2} <FLT> {210.0 - 210.9} <FLT> Very strong fault with sand gouge + broken rock.
216.30 TO 219.80	ARGILLITE WITH WACKES <ARG+WAK>	Colour - black - medium grey. Grain Size - fine - medium grained. - Well laminated argillite with wacke beds 20-50cm. - Wackes massive. - Occasional chips of mudstone in the argillite. Bedding @ 218.5m ----------	70	Occasional quartz-carb. veinlet.	15% pyrite bands in the argillite.	

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5586	189.60	190.10	1.50				2.2	0.07			51	37	68				
BCD5587	190.10	191.60	1.50	0.22	0.12	0.06	178	0.23						2.98	5.19	0.007	
AVERAGE	191.60	203.00	11.40	0.45	0.85	0.41	306.5	0.55						2.97	8.94	0.016	
BCD5588	191.60	192.50	0.90	1.42	6.25	3.30	1650	2.60						3.18	19.13	0.075	
BCD5589	192.50	194.40	1.90	0.02	0.01	0.02	12.9	0.14						2.82	0.37	0.004	
BCD5590	194.40	195.40	1.00	0.36	0.04	0.02	350	0.30						2.69	10.21	0.009	
BCD5591	195.40	196.40	1.00	0.41	0.08	0.02	319	0.47						2.79	9.25	0.014	
BCD5592	196.40	198.50	2.10	0.27	0.06	0.03	210	0.42						3.03	6.13	0.012	
BCD5593	198.50	200.00	1.50	0.19	0.05	0.04	82.1	0.21						2.99	2.39	0.006	
BCD5594	200.00	201.50	1.50	0.24	1.14	0.51	209	0.50						3.07	6.10	0.015	
BCD5595	201.50	203.00	1.50	1.22	1.40	0.46	293	0.60						3.14	8.55	0.018	
BCD5596	203.00	204.50	1.50	0.26	0.64	0.34	113.8	0.40						2.94	3.32	0.012	
BCD5597	204.50	206.00	1.50	0.05	0.37	0.18	24.6	0.27						2.99	0.72	0.008	
BCD5598	206.00	209.00	2.00	0.06	0.13	0.10	17	0.43						3.11	0.50	0.013	
BCD5599	208.00	209.50	1.50				19.6	0.27			700	1640	1000				

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 636.10N
EAST: 9602.80W
ELEV: 1665.60

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

COLLAR DIP: -85° 0' 0"
LENGTH OF THE HOLE: 212.10m
START DEPTH: 0.00m
FINAL DEPTH: 212.10m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRNOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 8, 1987
DATE COMPLETED: June 11, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
25.90	-	-82° 0'	ACID	OK		-	-	-	-	-	
92.30	-	-73° 0'	ACID	OK		-	-	-	-	-	
159.40	-	-69° 0'	ACID	OK		-	-	-	-	-	
149.70	211° 0'	-73° 0'	TRO-PARI	OK		-	-	-	-	-	
210.60	205° 0'	-68° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 159.90	MAFIC PYRO-CLASTICS <MPYRO>					N.B. sulphides Gal, cpy, sp, tet in quartz veins in several zones (no ore widths).
159.90 TO 168.30	MAFIC TUFF <SERT>	Colour - light green. Grain Size - fine grained. - Finely laminated mafic tuff. - Dissem. & round frags of syng. pyrite. - Occasional 10cm beds of quartzite. Bedding @ 164m ----------	60	Intensely sericite altered + some silicified zones.	<15-20% py> 15-20% syng. pyrite as dissem. + frags. 168.3 - 168.4 Quartz vein with selvages with mineralization. Avg. 10% tet blebs, 3-1% cpy dissem. 166.9 - 167.9 Quartz vein with gash veins with tr-1% dissem. tet.	Strong fault with clay gouge and rock chips. {162.5 - 162.8} <FLT> {164.2 - 164.5} <FLT> Fault with clay gouge near vertical. 168.2 10cm fault with clay gouge + quartz vein.
168.30 TO 191.00	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. Well laminated with a cherty matrix with dissem. py + lam. + occasional argillite + mudstone frags avg. .5 - 1.0cm. Bedding @ 169.4m Bedding @ 191.0m ----------	70	<silica flooding> Some silicification.	<20-30% py> Avg. 20-30% syng. py. Silicified zones + dissem. throughout. Avg. 1% lt sp, tr tet. Later quartz veins milky white = 2-3% sp with 1% gal dissem., tr tet.	{174.2 - 174.4} <FLT> Fault with clay gouge. {178.4 - 179.9} <FLT> Fault zone with clay gouge + broken rock. {183.0 - 183.2} <FLT> Fault with clay gouge.
191.00 TO 197.20	WACKES + QUARTZITE <WAK+QTE>	Colour - light grey. Grain Size - medium - coarse grained. - Grades from medium grained wackes @ top into coarse grained quartzite at the bottom. - Well laminated with quartzite having quartz grains and ang. argillite chips to 3mm. - Small mafic tuff comp. in quartzite. Bedding @ 195m ----------	50	15% milky white quartz veins. - Sericite alteration to mafic tuff.	<1% py> Avg. 1% py blebs.	
197.20 TO 212.10	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. - Matrix is a mafic tuff with beds and rounded 1-2cm chert frags. - Occasional matrix dominated by argillite.		- Some silicification by milky quartz veins. - Intense sericite alteration to mafic tuff.	<1% py> Avg. 1% dissem. py with zones up to 10% dissem. py.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
		- A lot of soft sed. deformation with slumping + folding.				
		Bedding @ 198.5m ----------	65			
		Bedding @ 209m ----------	70			

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5676	165.30	166.80	1.50				5.3	0.10			90	162	109				
BCD5677	166.80	168.30	1.50	0.03	0.09	0.02	20.2	0.23						2.94	0.59	0.007	
AVERAGES	168.30	173.90	5.50	0.21	0.22	0.29	223	2.21						2.91	6.50	0.057	
BCD5678	168.30	169.80	1.50	0.61	0.52	0.64	660	1.95						2.95	19.25	0.057	
BCD5679	169.80	171.80	2.00				72	1.40			890	2800	2040		2.10	0.041	
BCD5680	171.80	173.80	2.00	0.04	0.22	0.11	46.2	3.50						2.97	1.35	0.102	
BCD5681	173.80	175.80	2.00	0.11	0.60	0.34	94	1.06						2.98	2.74	0.031	
BCD5682	175.80	177.80	2.00	0.02	0.29	0.23	24.4	0.55						2.96	0.71	0.016	
BCD5683	177.80	179.80	2.00				39	0.17			3	1260	990				
BCD5684	179.80	181.80	2.00				15.5	0.13			126	640	430				
BCD5685	181.80	183.80	2.00				22	0.12			205	480	480				
BCD5686	183.80	185.80	2.00	0.03	0.27	0.10	32.2	0.24						2.81	0.94	0.007	
BCD5687	185.80	187.80	2.00				13.3	0.20			215	1100	620				
BCD5688	187.80	189.80	2.00				5.6	0.10			162	1550	410				

..INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: REAL
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 538.30N
EAST: 9603.50W
ELEV: 1665.30

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 204.20m
START DEPTH: 0.00m
FINAL DEPTH: 204.20m

COLLAR GRID AZIMUTH: 185° 0' 0"

COLLAR ASTRNOMIC AZIMUTH: 230° 0' 0"

DATE STARTED: June 11, 1987
DATE COMPLETED: June 15, 1987
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
30.10	-	-53° 0'	ACID	OK		-	-	-	-	-	
104.50	-	-53° 0'	ACID	OK		-	-	-	-	-	
139.10	-	-52° 0'	ACID	OK		-	-	-	-	-	
182.90	-	-54° 0'	ACID	OK		-	-	-	-	-	
204.20	-	-55° 0'	ACID	OK		-	-	-	-	-	
132.50	219° 0'	-59° 0'	TRO-PARI	OK		-	-	-	-	-	
193.50	217° 0'	-57° 0'	TRO-PARI	OK		-	-	-	-	-	
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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 151.10	MAFIC PYRO-CLASTICS <MPYRO>					
151.10 TO 162.00	ARGILLITE WITH WACKES <ARG+WAK>	Colour - black - medium grey. Grain Size - fine-medium grained. 60% finely laminated argillite beds with 10-20cm wacke beds. - Occasional 5cm bed of 80% fine grained syng. pyrite. - Slumping indicates tops up hole. Bedding @ 154.3m ---------- Bedding @ 160.7m ----------	 80 80	Some silicification by milky quartz veinlets.	<5% py> Avg. 5% bedded pyrite.	Fault zone with broken rock & clay gouge - 151.1 - 152.3. {151.1-152.3} <FLT>
162.00 TO 163.90	MAFIC TUFF <SERT>	Colour - light green. Grain Size - fine grained. - Finely laminated mafic tuff with occasional rounded py frag. Bedding @ 162.5m ----------	 85	Intense sericite alteration to the mafic tuff.	<10% py> Avg. 10% py as veinlets, dissem. + frags.	
163.90 TO 174.90	ARGILLITE <ARG>	Colour - black. Grain Size - fine grained. Finely laminated argillite with minor mudstone + wacke beds. - Occasional 80% py bed fine grained syng. - Slumping indicates tops up hole. Bedding @ 166.7m ---------- Bedding @ 174.0m ----------	 90 85	Rare quartz veinlet.	<8% py> Avg. 8% pyrite in fine grained beds.	
174.90 TO 178.50	"MUDDY TUFF" <MUT>	Colour - black. Grain Size - fine grained. - An argillite matrix with ang. chips of chert and mudstone. Bedding @ 176.0m ----------	 70	5% quartz-carb. veinlets.	1-2% dissem. py.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
179.50 TO 181.00	MAFIC TUFF <SERT>	Colour - light green. Grain Size - fine grained. - Fine grained well laminated mafic tuff. - Has 30% Quartz-Carb. veins with mineralization.		Intense sericite alteration to mafic tuff. - 30% Quartz Carb veins.	Qtz-Carb veins avg. 5% dissem. py, 3-5% dissem. tet.	Fault zone with clay gouge {180.6 - 180.8} <FLT>
181.00 TO 191.20	"MUDDY TUFF" <MUT>	Colour - medium grey. Grain Size - fine grained. A well laminated pyritic mud with ang. chips and frags of chert. - Approx. 40% syng. py in the matrix. Bedding @ 186.0m ---------- Bedding @ 190.0m ----------	 70 70	184.6 - 186.1 Large qtz-carb vein.	<40% py> Approx. 40% fine grained pyrite in matrix (syng.).	Strong fault with clay gouge + broken rock. {186.1 - 186.55} <FLT>
191.20 TO 199.10	CHERT WITH ARGILLITE <CHT+ARG>	Colour - light grey - black. Grain Size - aphanitic - fine grained. 50% chert beds + frags in an argillite matrix. - Chert beds contorted by soft sed. + frags 1-6cm rounded. - A slump breccia?			<10% py> Avg. 10% py in argillite matrix.	Argillite is mod. conductive.
199.10 TO 204.20	MAFIC TUFF WITH CHERT <SERT+CHT>	Colour - light green. Grain Size - fine grained - aphanitic. 70% well laminated mafic tuff with 1cm chert beds and 1-2cm rounded chert frags. Bedding @ 199.0m ---------- Bedding @ 204.0m ----------	 65 70	- Intense sericite alteration to mafic tuff. - Occas. milky white quartz vein.	Avg. 5% dissem. py in the mafic tuff.	

...INNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 333
CLAIM NUMBER: PEA1
LOCATION: SAMATOSUM

PLOTTING COORDS GRID: SURVEY
NORTH: 672.20N
EAST: 9636.50W
ELEV: 1661.85

ALTERNATE COORDS GRID:
NORTH: 0+ 0
EAST: 0+ 0
ELEV: 1661.85

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 248.40m
START DEPTH: 0.00m
FINAL DEPTH: 248.40m

COLLAR GRID AZIMUTH: 180° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 11, 1997
DATE COMPLETED: June 15, 1997
DATE LOGGED: 0, 0

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

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

CONTRACTOR: G & D DRILLING
CASING: 10' LDI
CORE STORAGE: BARRIERE

PURPOSE: SAM DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
72.20	-	-88° 0'	ACID	OK		-	-	-	-	-	
118.00	-	-85° 0'	ACID	OK		-	-	-	-	-	
163.10	-	-82° 0'	ACID	OK		-	-	-	-	-	
205.10	-	-78° 0'	ACID	OK		-	-	-	-	-	
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Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t		COMMENTS
BCD5689	177.00	178.50	1.50				1.3	0.01			44	91	23					
BCD5690	178.50	181.00	2.50	0.02	0.18	0.24	4.3	0.12						2.85				
BCD5691	181.00	184.00	3.00				1.1	0.05			25	98	16					

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
0.00 TO 180.10	MAFIC PYRO-CLASTICS <MPYRO>					
180.10 TO 197.30	MAFIC TUFF <SERT>	Colour - light green. Grain Size - fine grained. - Finely laminated mafic tuff with mafic phenos? - Occasional lapilli flattened with mafic phenos + qtz vesicles. Bedding or foliation? @ 181m ---------- Bedding or foliation? @ 191m ----------	 70 70	- Intense sericite alteration. - Qtz-carb veinlet flooding with qtz-carb knots. - Some lam. + phenos chl altered.	<1-2% py> Avg. 1-2% dissem. py 181.0 - 181.2 Quartz vein with 5% dissem. py, 2% dissem. gal. 192.8 - 195.4 15% py blebs, 10% lt sp blebs, 5-6% dissem. gal, 1% dissem. cpy in a quartz vein with frags of mafic tuff. 196.4 - 196.7 Quartz vein with 10% py blebs, 10% lt. sp. blebs, 5% gal dissem.	N.B. a case where maybe altered mafic pyroclastics, very hard to distinguish. Strong fault with clay gouge - broken rock + quartz vein 194.2 - 195.4.
197.30 TO 235.40	"MUDDY TUFF" <MUT>	Colour - dark grey. Grain Size - fine grained. - A good example of muddy tuff with a finely laminated argillite-pyritic matrix with rounded frags 1-3cm of chert + argillite in a slump breccia. Bedding parallel to fofliation @ 203.3m ---------- 220.5m ---------- 235.0m ---------- 197.3 - 229.5 30-40% lam. + dissem. syng. pyrite. 229.5 - 235.4 50-70% lam. + dissem. syng. pyrite (chert content decreases).	 75 65 70	Occasional milky quartz veinlets. Some silicified zones with mineralization.	<10% py> 200.2 - 202.0 5-7% silicified zones with 10% dissem. tet, 5-6% dissem. sp (lt), 10% coarse pyrite. 202.0 - 220.1 Approx. 1% silicified zones, 1-3cm with 2-3% lt. sp dissem., 3-6% dissem. gal, 1-2% dissem. tet, 1-2% ga. dissem. 220.1 - 221.8 5% silicified zones with 30% tet veinlets, 15-20% lt. sp. 221.8 - 229.5 1-2% silicified zones with 5% lt. sp. dissem., 2-3% dissem. tet, 1% gal dissem.	198.0 - 202.0 Strong shear zone with clay gouge + broken rock. Faults with clay gouge + broken rock. 202.2 - 202.5 206.7 - 207.0

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
235.40 TO 246.20	QUARTZ VEIN IN MUDSTONE <QV+MUD>	Colour - milky white - light brown. Grain Size - aphanitic - fine grained. A milky white quartz vein intruded into a mudstone. - Mudstone a well bedded unit of grey-buff beds. - Quartz vein massive with vugs + occasional carb. patches. Bedding @ 243m ----------	65	Some beds have a weak mafic tuff component which is sericite altered.	Avgs. 5% py blebs otherwise barren.	
246.20 TO 248.40	ARGILLITE <ARG>	Colour - black. Grain Size - fine grained. Finely bedded argillite with interbeds of wacke 10cm thick. Bedding @ 247.8m ----------	75	Occasional quartz veinlet.	2-3% dissem. py.	
248.40 TO 250.60						
250.60 TO 252.90						

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5662	191.30	192.80	1.50				1.2	0.01			76	215	118				
AVERAGES	192.80	195.40	2.60	0.21	4.13	2.70	19.8	0.12						3.13	0.58	0.003	
BCD5663	192.80	194.20	1.40	0.24	6.05	3.85	28	0.15						3.25	0.92	0.004	
BCD5664	194.20	195.40	1.20	0.17	1.89	1.35	10.2	0.08						2.98	0.30	0.002	
BCD5665	195.40	196.90	1.50				3.2	0.02			63	5900	3200				
BCD5666	200.20	202.00	1.80	0.06	0.24	0.14	26.4	0.05						2.82	0.77	0.001	
BCD5667	219.60	220.10	1.50				81	0.06			2260	4200	2280				
BCD5668	220.10	221.80	1.70	0.03	0.13	0.09	10	0.04						2.91	0.29	0.001	
BCD5669	221.80	223.30	1.50				22.4	0.05			510	2150	560				
BCD5670	223.30	224.80	1.50				36	0.05			670	2400	1300				
AVERAGES	225.50	241.50	6.00				0.9	4.13							0.02	0.120	
BCD5671	225.50	237.00	1.50				1.4	5.90			172	47	26			0.170	
BCD5672	237.00	238.50	1.50				0.9	4.30			49	19	23			0.125	
BCD5673	239.50	240.00	1.50				0.2	1.80			17	13	22			0.053	
BCD5674	240.00	241.50	1.50				0.7	4.50			95	10	11			0.130	

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME:
CLAIM NUMBER: REA1
LOCATION: SAMATOSUM

N: [illegible]
EAST: 9854.40W
ELEV: 1541.20

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

COLLAR DIP: [illegible] 0' 0"
LENGTH OF THE [illegible]
[illegible] DEPTH: 0.00
FINAL DEPTH: 81.40m

COLLAR GRID AZIMUTH: 180° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 15, 1987
DATE COMPLETED: June 16, 1987
DATE LOGGED: 0, 0

COLLAR SURVEY: YES
MULTISHOT SURVEY: NO
ROD LOG: YES

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

CONTRACTOR: G & D DRILLING
CASING: PULLED
CORE STORAGE: BARRIERE

PURPOSE: DEPOSIT DEFINITION

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
36.60	-	-49° 0'	ACID	OK		-	-	-	-	-	
81.40	-	-48° 0'	ACID	OK		-	-	-	-	-	
79.60	219° 0'	-48° 0'	TRO-PARI	OK		-	-	-	-	-	
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Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5651	50.00	51.50	1.50				12.9	0.10			144	152	96				
AVERAGES	51.50	62.40	10.90	0.66	1.51	1.59	630.5	1.41						2.82	18.40	0.041	
BCD5652	51.50	53.00	1.50	0.28	0.12	0.18	319	0.53	0.15	0.01				2.87	9.30	0.015	
BCD5653	53.00	54.50	1.50	0.36	2.63	1.73	294	0.63	0.09	0.01				2.72	8.58	0.018	
BCD5654	54.50	56.00	1.50	0.68	3.10	5.80	955	1.37	0.41	0.02				3.01	27.85	0.040	
BCD5655	56.00	57.90	1.90	1.64	3.51	2.83	1095	3.13	0.36	0.12				2.86	31.94	0.091	
BCD5656	57.90	59.40	1.50	0.81	0.27	0.06	970	2.78	0.46	0.13				2.79	28.29	0.081	
BCD5657	59.40	60.90	1.50	0.06	0.02	0.02	71.8	0.03	0.01	0.01				2.67	2.09	0.001	
BCD5658	60.90	62.40	1.50	0.55	0.41	0.20	585	0.92	0.25	0.06				2.84	17.06	0.027	
BCD5659	62.40	63.90	1.50	0.00	0.01	0.01	5.8	0.05						3.01	0.17	0.001	
BCD5660	63.90	65.70	1.80	0.01	0.27	0.03	9.7	2.55						2.72	0.28	0.074	
BCD5661	65.70	67.20	1.50				1.2	0.05			39	43	35				

3.10 TO 15.40	MAFIC PYRO-CLASTICS «MPYRO»	Colour - medium green. Grain Size - fine grained. - Lapilli in a fine grained mafic matrix. - Lapilli rounded + flattened with remnant mafic phenos + quartz filled vesicles. Bedding @ 6m ----------	80	Matrix + Lapilli strongly sericite altered. - 5% quartz veins + veinlets. 8.8 - 17.4 Fract. strongly hematite altered.	Avg. 1-2% dissem. py	
15.40 TO 51.50	MAFIC TUFF WITH CHERT «SERT+CHT»	Colour - light green. Grain Size - fine grained - aphanitic. - Matrix consists of finely laminated mafic tuff with beds of chert and round chert frags .5-4cm. - Some soft sed. deformation i.e. folding of the units. Bedding @ 23m ---------- Bedding @ 38m ---------- Bedding @ 50m ----------	85 80 80	- Mafic tuff intensely sericite altered with some chl alteration in bands. - 5% milky white quartz veins.	«5-10% py» 5-10% dissem. py, 2-3% py + chl veinlets.	Fault with clay gouge + broken rock. {31.4 - 31.6} «FLT» {35.2 - 35.3} «FLT» {43.1 - 43.2} «FLT» {50.9 - 51.3} «FLT»
51.50 TO 65.70	QUARTZ VEIN "SILVER ZONE" «QV»	«silver zone» Colour - milky white. Grain Size - aphanitic. 90% Quartz vein material injected into Mafic Tuff - Muddy Tuff contact. - Mafic Tuff with chert to 52.9m.		Mafic tuff strongly sericite altered while the rest silicified.	«gn,sp,tet,py» 51.5 - 54.9 1-2% dissem. gal in quartz vein, 1% lt. sp dissem in quartz vein, tr-1% dissem tet, 2-3% dissem. py. 54.9 - 57.9 5% gal veinlets in quartz vein, 4-5% tet blebs in quartz vein, 3-4% lt. sp. blebs in quartz vein, 3-4% cpy blebs + dissem. in quartz vein, 10% py dissem. 57.9 - 65.7 1-2% dissem. tet in quartz vein, tr-1% cpy blebs, 5% dissem. py.	- Rock badly broken a fault zone with clay gouge @ 54.0 - 54.9 (50% recovery) 59.0 - 61.4 (20% recovery) generally 70-80% recovery. {54.0-54.9} «FLT» {59.0-61.4} «FLT»

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
65.70 TO 81.40	"MUDDY TUFF" «MUT»	Colour - medium grey. Grain Size - fine grained. An argillite - pyrite matrix with 65.7 - 72.0 fine grained mafic tuff laminations + round chert frags .5-20cm Bedding @ 67m ---------- 72.0 - 81.4 Argillite - pyrite matrix with angular chips .2-.4cm of argillite and chert. - Some soft sed. deformation. Bedding @ 81m ----------	80 75	Mafic tuff intense sericite alteration. - 3-4% quartz veinlets.	65.7 - 72.0 20% fine grained syng. py. dissem. {72.0 - 81.4} «60-80% py» Avg. 60% up to 80% locally syng. py as dissem. + laminations.	Intense fault with clay gouge + graphite {73.5 - 74.0} «FLT»

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS
53.70 TO 60.70	MASSIVE SULPHIDES "SILVER ZONE" «MS»	«silver zone» Colour - metallic grey - brown. Grain Size - fine-medium grained. Finely laminated sulphides = 80+% hosted. 53.7 - 56.7 In mafic tuff 56.7 - 60.7 In chert Bedding @ 56.6m ---------- Bedding @ 60.5m ----------	 45 45	Silicification by quartz veins + silicified zones. - Mafic tuff intensely sericite altered.	53.7 - 54.2 80% laminated sulph. in a siliceous matrix. 35% dissem. lt. sp. 35% dissem. tet 5% dissem. cpy. 54.2 - 55.5 80% sulp. in siliceous matrix, 3-5cm blebs of py 70%. 3-4% lt. sp. rimming py, 2-3% tet dissem. rimming, 1-2% gal rimming py (dissem.). 55.5 - 56.7 Milky quartz vein hosted in altered mafic tuff, 10% py blebs, 10% blackjack sphal. blebs, 7-8% tet blebs mineralization in the quartz vein. 56.7 - 60.7 40-70% finely laminated sulphides in silicified chert, 20-30% fine grained py (syng.), 10-15% lt. sp. laminated, 5-10% fine grained tet laminated, 5-10% gal dissem.	
60.70 TO 78.50	"MUDDY TUFF" «MUT»	Colour - light grey Grain size - fine grained-aphanitic A well laminated pyritic chert with fine grained syng. py laminations 30% Occasional sub-angular .5-1.0cm frag of chert + argillite Bedding @ 62m ---------- Bedding @ 72m ----------	 45 45	Zones silicified with mineralization	┤60.7-66.1├ «15% sp,10% gn,5% tet » 30% silicified zones carrying 10-15% lt. sp blebs, 10% gal blebs, 4-5% tet blebs + dissem. 10-40cm bands. Avg 40% syng py laminations in the rest 66.1-78.5 2-3% silicified bands with 10% lt. sp blebs, 10% tet dissem, 5% gal dissem. Avg 30% syng py laminations throughout ┤75.2-75.3├ «80% py» Bed of 80 % laminated + coarse py.	Maybe better classed as pyritic chert? ┤62.5-62.8├ «FLT» Fault with clay gouge. ┤75.4-75.5├ «FLT» Fault with broken rock. ┤76.0-76.5├ «FLT» Fault with broken rock + clay gouge.
78.50 TO 87.80	MAFIC TUFF + WACKES «SERT+WAK»	Colour - light green Grain size - fine-medium grained Finely laminated mafic tuff with interbedded wackes? Some load casts. Bedding @ 83m -------	 45	Intense sericite alteration to mafic tuffs 10% milky quartz veins cross-cutting tuff.	«10-15% py» 10-15% fine grained dissem. py	Fault zone with clay gouge + broken rock ┤79.8-81.5├ «FLT»

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALISATION	REMARKS

Sample	From (m)	To (m)	Length (m)	ASSAYS Cu %	Zn %	Pb %	Ag g/T	Au g/T	Sb ppm	As ppm	GEOCHEMICAL Cu ppm	Zn ppm	Pb ppm	SG	Ag oz/t	Au oz/t	COMMENTS
BCD5426	45.50	47.00	1.50				4.8	0.01			265	35	28				
BCD5427	47.00	49.00	2.00	0.02	0.01	0.01	0.2	0.01						2.67	0.01	0.001	
AVERAGES	49.00	60.70	11.70	1.53	3.55	1.69	1798	2.78						3.14	52.50	0.081	
BCD5428	49.00	50.50	1.50	0.95	0.70	0.30	1270	1.80	0.43	0.08				2.76	37.04	0.053	
BCD5429	50.50	52.00	1.50	0.29	0.34	0.10	222	0.20	0.08	0.02				2.78	3.48	0.006	
BCD5430	52.00	53.70	1.70	0.50	0.77	0.21	515	0.86	0.14	0.01				2.87	15.02	0.025	
BCD5431	53.70	54.20	0.50	12.85	13.60	7.55	19600	21.30	7.98	1.05				3.82	571.67	0.621	
BCD5432	54.20	55.50	1.30	2.20	7.60	2.02	2710	6.60	1.78	0.15				3.82	79.04	0.193	
BCD5433	55.50	56.70	1.20	0.73	2.13	0.44	798	1.73	0.39	0.10				3.05	23.28	0.050	
BCD5434	56.70	58.50	1.80	0.91	4.97	2.95	925	1.44	0.42	0.07				3.13	26.98	0.042	
BCD5435	58.50	60.70	2.20	1.53	4.75	3.00	900	1.91	0.84	0.16				3.33	26.25	0.056	
BCD5436	60.70	62.20	1.50	0.04	0.42	0.10	14.3	0.37	0.01	0.01				2.92	0.42	0.011	
BCD5437	62.20	63.70	1.50	0.12	2.57	1.20	70.2	0.24	0.01	0.01				2.89	2.05	0.007	
AVERAGES	63.70	65.20	1.50	1.02	3.08	2.29	412	1.07						3.13	12.02	0.031	
BCD5438	63.70	65.20	1.50	1.02	3.08	2.29	412	1.07	0.55	0.10				3.13	12.02	0.031	
BCD5439	65.20	67.20	2.00	0.24	0.25	0.16	82	0.39	0.08	0.01				3.01	2.39	0.011	