825110

SAMATOSUM EXPLORATION

DIAMOND DRILL HOLES

RG 254 - RG 307

1989 DRILLING

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG254 | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: SAMATOSUM DEPOSIT

PLOTTING COORDS GRID:
NORTH: 903.00N
EAST: 9709.00W
ELEV: 1434.00

ALTERNATE COORDS GRID:
NORTH: 9+ 3N
EAST: 97+ 9W
ELEV: 1434.00

COLLAR DIP: -88° 0′ 0"
LENGTH OF THE HOLE: 997.30m
START DEPTH: 0.00m
FINAL DEPTH: 997.30m

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

DATE STARTED: March 12, 1989
DATE COMPLETED: 0, 0
DATE LOGGED: 0, 0

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

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

CONTRACTOR: ATLAS DRILLING LTD.
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERE

PURPOSE: TO TEST THE SAM AND REA ZONES AT DEPTH

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
26.80	-	-87° 0′	ACID	OK		-	-	-	-	-	
62.80	-	-86° 0′	ACID	OK		-	-	-	-	-	
99.40	-	-82° 0′	ACID	OK		-	-	-	-	-	
126.00	-	-81° 0′	ACID	OK		-	-	-	-	-	
151.80	-	-80° 0′	ACID	OK		-	-	-	-	-	
181.30	-	-79° 0′	ACID	OK		-	-	-	-	-	
215.20	-	-77° 0′	ACID	OK		-	-	-	-	-	
244.70	-	-77° 0′	ACID	OK		-	-	-	-	-	
275.20	-	-77° 0′	ACID	OK		-	-	-	-	-	
305.70	-	-71° 0′	ACID	OK	6 DEGREE DEVIATION!!	-	-	-	-	-	
340.10	-	-71° 0′	ACID	OK		-	-	-	-	-	
370.00	-	-71° 0′	ACID	OK		-	-	-	-	-	
401.10	-	-71° 0′	ACID	OK		-	-	-	-	-	
458.10	-	-68° 0′	ACID	OK		-	-	-	-	-	
488.80	-	-67° 0′	ACID	OK		-	-	-	-	-	
535.20	-	-65° 0′	ACID	OK		-	-	-	-	-	
660.10	-	-63° 0′	ACID	OK		-	-	-	-	-	
759.60	-	-61° 0′	ACID	OK		-	-	-	-	-	
185.90	201° 0′	-77° 0′	TRO-PARI	OK	Doubtful!	-	-	-	-	-	
546.50	213° 0′	-65° 0′	TRO-PARI	OK		-	-	-	-	-	
968.00	225° 0′	-55° 0′	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		silicification. Generally bleached. Primary		yellow sericite on widely spaced foliat -ion planes (15-20mm).	Py 1%.	
44.50 TO 103.20	«MPYR» Mafic Fragmental	Dark Green. Relatively unaltered mafic fragmental. Lapilli- 20-30%, lenticular to rounded, up to 65mm Aspect ratio 3:1. Matrix supported. Lapilli are possibly porphyritic or amygdaloidal?		Rare Qz-Cal str. Rock composed of Chl and Cal. Green schist assemblage. Localized zones of weak sil contain 5 -10% Py and tr Sph.	Py tr	
		Foliation @ 53.6m	66			
		@ 62.9m	60			
		@ 90.2m	52			
		91.5-91.6 3cm green clay gouge at top of 3cm Qz-Dol-Py vein. Vein cuts fol. 1-5mm Py crystals occur in a patchy silicified envelope along Fol.			Py 1-% as envelope to Qz-Dol vein.	
103.20 TO 158.70	«SEMV» Sericitized Mafic Fragmental	Yellow-Green. Texturally sililar to the above interval. Rock is a mafic fragmental exhibiting varying degrees of deformation and alteration. Lapilli are pervasively sericitized to a pale yellow-green . These are highly calcite rich. Groundmass consists of chl-cal. Fine str. and boudins after Qz-Cal str occur throughut interval.		Alteration increases progressively down int. Preferential Ser-cal alt of lapilli gives bleaching effect. Some lapilli have calcite haloes up to 10mm. (e.g. at 118.4m). Calcite spotting (vein remnants?) occurs over wide inter -vals. Qz lenticles common.	Py tr over interval.	
		Foliation @ 105.4m	70			
		@ 128.0m	63			
		@ 139.8m	58			
		{106.4-107.3} «SEMV»		Incresed cal spotting (to 25%).	Fine Py dusting of frags only. «Py 5%»	107.8 Clay gouge.
		107.3-108.0				Broken core.
		{112.85-112.95} «SMS VEIN» A 4cm wide Qz-Dol vein with 30-40% sulphides.		Chloritization of wall rock inclusions in vein. Also chloritic envelope. Cut by later Py-Chl vein. Dark green mica in vein - coarse chlorite?	«Sph. 15%, Tt 20%, Py 5-10%» Tetrahedrite or dark grey Sph mantles light coloured sph lenses. Tr Gl?	Assay BCD 18481 112.85-112.95
		125.3-125.7 Broken core.				
		{142.4-142,7} «QZ-DOL VEIN» Vein sub-parallel to CA (up to 15 degrees). Irregular but sharp contac ts cutting foliation. Late Py-Chl stringers cut ve in two sets; one parallel to CA and one parallel to Qz-Dol vein. Later veins contain brecciated Qz from earlier vein.			Very fine Py (tr-10%) in later chl str.	
158.70 TO 197.70	«MPYR» Altered Mafic Volcanic	Green-Grey. An abrupt change from a fragmental to a homogeneous textures interval. This may be a mafic tuff or an alteration product. Fragments appear to be obliterated by alteration and shearing. Unit is composed of fine grained, almost		Calcite content decreasing down hole (from 15% to 5%). Cal ocurs mainly in str and vein remnants. larger Qz-Dol ve ins to 30cm become common down int.	Py tr.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		massive chl containing lenses, whisps and streaks of Qz and cal. These are vein remnants. Foliation @ 183.4m	60			
		{170.9-172.2} «CALCITE VEIN» White, fine gr. Massive calcite with patches of chl. Good crack and heal textures implying multiple vein episodes. U. Contact------	70			
		{178.9-179.1} «PYMV» Pyritized mafic volcanic. A fine grained homogeneous rock with no primary textures. Sparse patchy cal str. (3-5%). Py to 30% Foliation poorly developed. Fine gr. sulphides occur as bands and in late cross-cutting fractures Contacts irregular.		Pervasine Py in recrystallized chl-cal rock.	«Py 30%»	
		187.3-187.6 Calcite vein. Massive cal-Qz vein show -ing crack and heal textures. Cockscomb and band- ing indicate multiple generations. Fine gr. sulphi des occur as bands in late cross-cutting fractures		5cm chloritized envelope.	Py tr-5%	
		193.0-197.7 A zone of sil and Qz veining. 60% Qz veins and str. Approximate orientation	60	Wall rocks recryatallized to fine gr. homogeneous unit. Intensly pyritized ad jacent to veins for a distance of up to 70cm.	Py 30% in wallrocks adjacent to veins. Py tr-3% in veins.	
		193.4-193.9 90% Qz-Dol veins. Intervening wallrock is pervasively pyritized to a MUDDY TUFF looking rock.		Veins fractured. Dol fills late cracks in Qz veins. Both veins cut by later chl str. up to 15mm wide.	Py tr in veins. Py 30-50% as fine grained envelope to 20cm.	Is Muddy Tuff caused by pyritization of a preexisting lithology?
		{193.9-195.5} «QZ-DOL VEIN» Grey-White. A complex vein made up of Qz and Dol. It contains irregular patches of white cal. Screens of chloritized wall rock are present in the vein. Some brecciation near vein margins. Central part of vein resembles pervasively silicified wallrock.		Patches of bright green mica in Qz. Adjacent wall rocks completely pyritiz ed to a muddy tuff look alike.	Upper 30cm of vein is massive to semi- massive sulphide. «Gl 30%, Sph 15%, Cp 1-3%»	Well mineralized from 195.9 to 196.2 Assay BCD 18483 195.9-196.2 18484 194.4-195.5
		{195.5-197.6} «PYMV» Pyritized mafic volcanic. Strongly resembles muddy tuff!.			«Py 10-20%»	
197.70 TO 239.10	«MPYR» Mafic Volcanic	Dark-Green. M-F Gr. Highly altered mafic volcanic. Primary textures wiped out by alteration and shear ing. A high degree of shearing throughout int. Qz- cal str. are boudinaged. Local patches of silicif- ication. Foliation @ 219.2 @ 232.6	70 66	Rock pervasively chloritized and weakly ser. Abundant str and remnants of veins throughout. Localized zones of sil.	Py tr.	
		{227.3-230.6} «SIL MV» Silicified mafic volcanic. A silica flooded int. Textures resemble QITE unit		Silica flooding and stringering.	Py tr.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		note close to the Sam orebody.				
		{232.3-233.5} «SIL MV» Grey-Green. A zone of heavy Qz veining and sil. Calcite is a major component of the veins. Veins have irregular contacts. Some appear to be folded. Average width 3cm.		Qz-Cal str and veins. Wallrocks mainly chl-cal. Weak yellow ser outlines fragments.	Py tr. Mainly in late str.	
239.10 TO 253.10	«SER MV» Sericitized Mafic Fragmental.	Yellow-Green. A dominantly fragmental unit displaying intense yellow sericite alteration, particularly in the lapilli. Down int ser becomes more abundant in matrix, occurring as sheets along foliation planes. A sudden loss of cal at the top of this int. Localized zones of grey sil are associated with Qz veins. Foliation @ 242.9 @ 248.8	58 70	Pervasive sericitization. Fragments altered to pale yellow colour. Ser. also present in fol parallel sheets with minor chl. These increase down int. General bleaching of rock. Patches of Sil.	«Py tr-1%» Mainly as discrete crystals associated with silicification.	
		242.6-242.7 Silicified Mafic Volcanic. This zone looks like a brecciated Qz vein in sil mafiv volc. Py concentrated in late fol parallel str. Contacts----	82	Silicification and Qz veining.	Py 3-5% in str.	
		{246.4-247.5} «SIL MV» Yellow-Grey. Pervasively silicified zone in ser. mv. Zone appears to be a silicified envelope to a Qz-Cal vein between 246.9 and 247.2m. The vein is complex with well developed breccia textures. Screens and lenses of Ser mv are present in the vein. L. Contact---	40	Silicified envelope to 30cm from Qz-Cal vein. Ser wallrock screens.	«Gl 1%, Cp tr, Py 3%»	Assay BCD 18485 246.4-247.5
		250.3-250.5 Qz-Dol vein ----------Contact @ 253.1--	40		Py tr.	
253.10 TO 269.60	«SIL ARG» Silicified Argillite	Grey to black. Fine gr. A highly sil and contorted graphitic argillite unit. Rock may have originally had a cherty component. High degree of strain has caused siliceous zones to be boudinaged. Breccia textures appear to be tectonic rather than depositional. Black graphite occurs along fol planes. Foliation erratic as a result of Sil. A possible clast of fine grained Py to 3cm in length noted in int. Rare ser sheets on foliations.		Pervasive Sil. Brecciation and open space filling by late silica. Rare Ser sheets on fol planes.	«Py tr -5%» as diss and possibly pyrite clasts.	End of mafics at 253.1m
269.60 TO 331.10	«SERT» Sericitized Argillite and Chert.	Yellow. F gr. A fine grained, yellow rock with a distinctive laminated or foliated aspect. Bands or lenses of grey to white silica comprise 20 to 30% of the int. These appear to be primary chert bands Texturally identical to the ARG+CHT unit. Foliation well developed. Silica bands become		Pervasive ser of interbedded argillite -chert unit. Cherty bands partially silicified.	«Py 5-15%» as str along fol planes. Sil zones contain traces of Gl, Sph and Cp in late fractures.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		boudined. Py widespread throughout as fine str along fol planes. Foliation @ 277.4m @ 288.0m	 55 70			
		{299.7-303.4} «SIL SERT» As above except for increased silica content. Rock is bleached to a pale yellow-green where sil is most intense. Qz ve ins to 5cm occur throughout int. These contain 1-5% diss sulphides.		Pervasive Sil alters preexisting sericitization.	Py 3-5%, Cp tr, Gl tr, Sph, tr, Tt tr.	Late stage veins: Qz only. Geochem BCD 18486 299.7-300.5 18487 300.5-301.9 18488 301.9-303.4
		{310.7-312.5} «SIL SERT» Yellow Grey. Int of intense sil. 70% Qz veins and silica patches. Remn ants and screens of SERT. Central vein at 311.0m contains flesh coloured carbonate in late fracture -s. Spots and euhedral crystals of grey Dol also noted close to vein margin.		70 % silicification. Intensity increas- ing down int.	Py 1-3% in late chl str.	
		{327.7-331.1} «SIL SERT»		Pervasive Sil. Py 5-15% in str.	Py veins to 15cm wide at 326.75m, 328.7 m, 329.5 and 330.2m. All contain traces of Gl, Sph, and Tt. «Py 20-40%»	
331.10 TO 337.80	«SIL SERT» Silicified Sericitic "Tuff"	Grey. Almost a cherty textured rock. Gradatinal co ntact with SERT above. Ser content decreases down interval leaving a siliceous rock. Well developed lensoid banding. Lamination (Tectonic or primary?) parallel to Fol. 1-3mm Py-Sph str along Fol planes . Sulphides become more abundant down int. Banding @ 333.2m	 60	Pervasive silicification. Ser decreas- ing down int.	Py increasing down int. «Py 20%» Semi-massive over narrow ints. Py also present in str with hay coloured Sph (tr) and Gl (tr). Fine laminae of Py may be syngenetic.	
		{335.9-336.8} «SMPY» An int of 20-40% Py as veins, str and f gr. bands. Veins sub-parallel to Fol. Fractures Py crystals to 3mm noted in veins.		Weak sil and ser.	«Py 20-40%» Gl tr, Sph tr	Geochem BCD 18492 331.1-332.6 18493 332.6-334.1 18494 334.1-335.9 18495 335.9-336.8 18496 336.8-337.8
337.80 TO 359.20	«MUT» Muddy Tuff	Medium grey. F gr. A well preserved lithic wacke with good graded beds on a 1 to 1.5m scale. These indicate tops up hole. Beds have fine pyritic argi llite tops and grade down into a polymictic conglomerate at the bottom. Argillite, chert and massive Py clasts are present. Black argillite 'rip-ups' are abundant near the base of each bed. These reach 5cm in diameter. Massive Py is develop ed near the bed tops. This is well laminated and l ooks exhalative. Gl and Sph rich laminae are noted . Granular diss. Py averages 15-20% throughout		Slight ser - only apparent on fol planes. Wide spaced Qz-Dol veins (at 1 to 2m intervals).	«Py 20-40%» Massive near tops of graded beds. Laminated with Gl and Sph over 2 to 5cm widths (e.g. at 338.1 and 339. 5m). Massive Py from 349.4-350.0m	Graded beds indicate tops up. Lenticular sulphide clasts to 30mm in length. Note sample BCD 18500 not taken.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		unit. Bedding Contact @ 338.8m	85			
		Foliation @ 339.1m	80			
		{342.75-343.0} «QZ VEIN» 6cm wide vein with 5% blebby Gl and trace Sph.			«Gl 5%»	Assay BCD 18507 342.75-343.0
		{347.9-349.4} «SMPY» Semi massive Py. Wacke unit with 40% diss. Py. Becomes massive over narrow sections (e.g. at 348.3 to 348.4m).		Weak Sericitization.	«Py 40%»	
		Bedding @ 348.3m	75			
		{349.5-349.9} «MSPY» Massive Pyrite. Int of 80% Py . Occurs as fine grained lenses and bands to 6cm wide. Diss and crystal aggregates also noted. Pseudo lamination parallels fol. Could be primary layering. Lamination @ 349.6m	50	Weak Ser.	«Py 80%»	BCD 18508 348.0-349.5 18497 349.5-349.9 18498 349.9-350.1 18499 350.1-351.6 18501 351.6-353.1
		349.9-350.1 Qz-Dol vein. A well mineralized vein in the massive sulphide section. Vein 3cm wide. Vein @ 349.9m	10		Wall rock - massive Py. Vein contains Gl 10%, Sph 3% and Py 10%.	
		350.1-359.2 Lithic Wacke. M-C gr. A homogeneous coarse grained unit containing 10-20% rounded clasts of grey chert, argillite and Qz vein. Feldspar crystals to 4mm are abundant in the matrix. No bedding observed. Foliation @ 355.4m	52		Py 20-30%	
359.20 TO 371.50	«CHAR» Cherty Argillite	Black. F gr. A graphitic chert or sil. argillite unit. Black, well laminated rock with 20-30% fine grained Py throughout. Py concentrated in distinct laminations indicates an exhalative origin. Sph present in an undetermined amount (HCl test). Pure graphite coats Fol surfaces. Wdiely spaced Qz veins and str occur along brittle fractures. Foliation @ 364.8m	40	Silicification?	Laminated to finely diss. Py. Sph. ? «Py 20-30%, Sph tr»	
		@ 371.5m	80			
		346.5-346.7 Qz vein			1-2% diss Sph, Py tr-1%	
		360.3-361.2 Rubbly Core				
		369.7-370.6 Rubbly Core				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
371.50 TO 406.60	«MUT» Muddy Tuff	Grey. Similar to the above unit but with a much higher ser content. F gr. Py is present throughout , becoming semi-massive over 10 to 30 cm ints. Foliation @ 377.8m	58	Moderate ser.	Py 20-30% as fine bands lenses and disseminated crystals. Possibly Sph.	
		{373.9-374.3} «MSPY» Massive Py. Matrix contain mainly ser. Fragments of chert and arg still present. Foliation @ 374.1m	50	Ser of matrix, Sparse Qz str.	«Py 80%»	Assay BCD 18509 373.9-374.3
		374.3-374.8 Semi-massive Py. Interbedded with grey chert and black argillite. Contorted bedding - folding. Foliation @ 374.3m	55	Weak ser.	Py 20%	
		380.8-381.4 A second penetrative cleavage is noted in this int. It is a fracture cleavage axial planar to 2 to 10cm "S" folds present in the int. These give a vergence direction upo hole. Fracture Cleavage	32			
		{388.8-399.5} «CHRT» Massive Grey chert with fine (1mm) Dol spots. Foliation @ 399.3m	55		Py 5%	
		{391.6-393.7} «CHRT P.CONG» Grey. Chert pebble conglomerate composed of flattened, rounded grey chert pebbles to 15mm across and 30mm long. Flat -ned along fol. Foliation @ 391.8m Massive chert at base of int.	30	Weak Ser.	«Py 5%»	
		400.4-400.6 Qz-Dol Vein. Vein contains a distinct pale pink carbonate mineral. This makes up 20% of the vein.		Qz 60%, Dol 20%, Pink Mineral 20%.	Py tr.	Assay BCD 18510 400.4-400.6
		401.8-402.5 Fold Closure. Layering changes from 60 deg at 401.8 to 0 deg at 402.4.				
		402.5-403.2		Intense sil. and mod ser.	Diss Py 5-10% as 5mm grains.	Alteration envelope.
		{403.2-406.2} «QZ-DOL VEIN» Qz- Dol vein with irregular screens of wall rock up to 3cm wide. No visible mineralization.		Ser of wall rocks (see above int)	Py tr-3% in late str.	Geochem BCD 18511 403.2-404.7 18512 404.7-406.2
		406.2-406.6 Brown. Massive Py with bands and lense s of Qz up to 10mm across. Well foliated. Foliation @ 406.4	60	Sil and weak Ser At 406.5m a 3cm vein contains a non micaceous bright green mineral. Pyrophyllite?	Py 70%, Gl tr	Geochem BCD 18513 406.2-406.6

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
406.60 TO 419.20	«CHRT, SERT +WACKE»	Pale grey. M-F gr. A non descript interval containing variable lithologies. Intervals of grey chert, sericitic tuff and what appears to be a dolomiti-zed wacke are noted. Chert becomes dominant down int.		Pervasive Dol and ser alt throughout non cherty sections. Abundant green mica at top 30cm.	Py tr-3%	
		{406.6-407.2} «SECH» Sericitic Chert. Green grey. Foliated chert with sheets of chl and ser. Pods of White Qz to 5cm also noted.				
		{407.2-407.7} «CHRT» Grey. Massive to foliated grey chert with yellow ser on partings.		Weak ser.	Py tr-1%	
		407.7-409.1 A non-descript med grained unit with a distinct mottled or granular texture. No foliation or bedding noted. Rare clasts of argillite suggest that rock is a wacke.		Chlorite spots to 3mm.		
		409.1-419.2 Interbedded sericitized wackes and grey cherts. chert increases down int. Minor chl component gives rock a greenish hue.		Weak ser and chl spotting.	Py tr-1% mainly on fol parallel str.	
419.20 TO 523.10	«ARG+CHRT» Interbedded Argillite and Chert	Grey to Black. F.gr. A highly folded unit consisting of well laminated graphitic argillite and grey chert. Bedding on a 1 tp 5cm scale. Cherty ints up to 3m in width make up 10% of the int. These are generally silicified and veined by Qz-Dol vein-s. Some contain pale brown Sph and traces of Gl.		Patchy sil of cherty sections associated with Qz-Dol veins.	Py tr. Qz-Dol veins contain small amounts of yellow Sph. and Gl. Py up to 3% is present in envelopes to 3cm around veins.	
		Foliation @ 461.1m	65			
		Structure: General bedding attitude is sub-para to CA. Cleavage is variably developed. Fracture cleavage- widespaced (10mm) in cherty beds and hinge zones. Penetrative cleavage closely spaced in limb areas and argillite beds.				Bedding/cleavage intersection gives tops up hole.
		427.9-434.6 Pale Grey. Grey chert.		Intense Sil. Creamy Dol occurs in late fractures. Chl alt of wall rock incl-usions.	Fine Py on Fol Parallel fractres. Py 1%	Geochem BCD 18514 427.9-429.4 18515 429.4-430.9 18516 430.9-432.4 18517 432.4-433.9 18518 433.9-434.6
		{440.1-440.5} «SMS VEIN» Semi massive Sph and Py in irregular Qz-Dol vein. Sp occurs as patches and streaks in sil argillaceous material. Py occurs as sub-hedral crystal aggregates to 5mm in diameter.		Rare sheets of yellow ser. Pervasive sil and Qz veining. Chl of argillite screens in vein.	«Sph 20%, Py 10%, Gl tr»	Assay BCD 18519 439.1-439.6 18520 439.6-440.1 18521 440.1-440.6 18522 440.6-441.9
		{439.1-439.6} «QZ-DOL VEIN» Vein in argillite.		Dol-Qz veins. Sil and Chl alt of argill	«Sph 1-3%, Gl 1%, Py 5%»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		Sil envelope to 30cm. Vein contains patches of yellow Sph and traces of Gl. Fine gr. Py occurs as an envelope within 3cm of Upper contact. ----------Upper Contact------	50	ite wall rocks. Pyrite as a 3cm envelope at the upper contact.		
		{479.7-480.8} «QZ-DOL VEIN» An irregular zone of veining. Probably a single vein sub-parallel to CA Vein contains sub to euhedral dol crystals. These look like an earlier phase Contact @ 482.8	0	Weak Chl of Argillite wall rock.	Py tr.	Geochem BCD 18523 479.7-481.2 18524 481.2-482.7 18525 482.7-483.5
		491.1-494.3 Qz veining. A zone of sil and Qz-Dol veining in graphitic argillite. Weak chl of wall rocks. veins sub-parallel to CA.		Weak Chl of wall rocks.	Py tr-1%, Sph-tr	Geochem BCD 18526 491.1-492.6 18527 492.6-494.1 18528 494.1-494.3
		504.7-505.4 Qz-Dol Vein sub-parallel to CA.		Pervasive sil of wall rock.	Py tr	"Z" fold at 494.4 gives anticline up hole.
		513.9-514.2 Pervasive sil and chl of argillite. Int contains 50% irregular Qz str.		Sil.	Py tr	Geochem BCD 18529 515.1-516.6 18530 515.6-518.1 18531 518.1-519.6 18532 519.6-520.3
523.10 TO 527.60	«SECH» Sericitic Chert	Yellow-Grey. A zone of intense sil and ser of a cherty rok. Bright yellow sericite occurs as sheet -ing parallel to fol. Matrix is mod to highly sil with patches and veins of bull Qz (to 15mm). Fol angles change constantly throughout int indica ting a possible F3 fold. Foliation @ 523.5m @ 526.1m	30 50	Ser ans Sil. Qz flooding at 523.1-523.3 Qz-Dol vein at 526.1 (15mm).	Py tr	
527.60 TO 556.60	«GR. ARG» Graphitic Argillite	Black to Dark grey. A highly deformed interval containing less than 10% grey chert bands (to 5cm) Fracturing gradually increases down int and the ro ck becomes progressively silicified. Localized zon es of tectonic brecciation hint at there being a fault close by. Foliation @ 543.9m	30	Patchy Sil containing irregular Qz vein -s that cross-cut the Fol. Veins reach 15cm in width. Wall rocks within 50cm of veins are bleached (i.e. weakly Ser)	538.0 A 3cm coarse grained Py vein. 541.1 8cm vein with coarse Aspy. Aspy 30%, Py 15%, Sp 1%	A Rea gold style vein. Assay BCD 18533 545.1-545.2
		537.5-543.9				Badly Broken Core.
		{547.1-548.4} Yellow Grey. A Fine gr. non foliated section caused by pervasive Sil and/or Ser of a mafic tuff section? This implies an interbedded contact with the rea mafics. Brittle fracturing has caused brecciation at 548.4m 547.0-547.1 Fault Gouge. 3cm		Pervasive Sil and Ser. with few Qz str .	Py tr.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		{553.9-556.6} «SHEAR» A zone of shearing and brecc -iation within the argillites. Qz veins and cherty bands are fragmented and flattened along fol. Gouge zone from 556.0-556.1. Brecciation at 556.4 ----------Sharp Contact @ 556.6m	80			This fault zone is within the argillite unit and therefore does not represent the bounding structure between Sam and Rea (if it exists).
556.60 TO 596.90	«MPYR» Highly Altered Mafic Tuff	Pale Grey-Green. A moderately to highly altered mafic volcanic rock. Texturally is consists of patches and distinct lenses of grey Silicification separated by a matrix of sheeted brown ser and chl . Rounded patches of medium grey Dol are conspic- uous (10-15%). Green-grey lenses may be altered la pilli. Evidence of primary layering at 569m where banding parallels CA. Foliation @ 559.3	55	Pervasive ser and chl alteration with patches of Sil and Dol. Late cross-cutt ing Qz-Dol veins (to 15cm).	Fine diss. Py occurs on fol planes, esp ecially in sil patches. Py tr-1% traces of Sph and Cp are present in the Qz-Cb veins.	REA STRATIGRAPHY! No major structure separates the Sam sequence from the Rea sequence. The contact appears to be gradational or interbedded in this hole.
		Several micro-diorite dykes occur in this interval				
		566.7-567.5 Breccia. Fault breccia in the mafic volcanics. Breccia fragments are foliated and rota ted, suggesting that it is a relatively young feat ure.		A soft medium green, non micaceous mineral is present between breccia frag -ments. Could be pyrophyllite?	Py tr. One Cp bleb seen in Qz str.	
		559.9-560.9 A Qz-Cb vein consisting of 60% Bull Qz and 20% grey euhedral Dol and 20% massive white Dol. ----------Lower Contact----	42			
		{574.4-577.5} «DIOR DYKE» Dark Grey. Salt and pepper textured, medium grained mela-dior -ite or gabbro. Rock consists of 50% 1-2mm, euhedral plagioclase phenocrysts in a fine grained melanocratic groundmass. The rock is unfoliated, suggesting a relatively young age (Tertiary?). A 5cm Qz-Cb vein occupies the upper contact of the dyke. This contains pale pink calcite. Adjacent wall rocks are intensly hornfelsed to a very fine grained, light brown, brittle rock.				
		{579.2-580.2} «HORNFELS» Pale Brown, fine grained cherty rock at cotact of dyke. Rock is extremely h rrd and brittle; a typical hornfels. Fractures hea led by Qz-Cb veins.		Qz-Cb stringers 5-10%	Py tr.	
		{580.2-581.8} «DIOR DYKE» Identical to the above		581.6-581.9 Silicification and Qz str.	Py 5% in the silicified area as dissem-	A 5cm fault gouge at 580.2m

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		diorite dyke. Bottom 30cm of int is highly Qz vein -ed and weakly pyritic. A pink to lilac coloured feldspar crystals noted in silicified area (albite ?).			inated cubes.	
		{581.9-596.9} «HORNFELS» Pale Brown. A zone of int ense cooking of the mafic pyroclastic adjacent to the dyke.		Hornfelsing.	Py tr.	
596.90 TO 657.80	«MAFIC TUFF»	Dark Green. A homogeneous interval showing little in the way of primary or secondary texture. Overall the rock is a green schist composed mainly of chlorite and calcite. Narrow intervals do exhi bit fragmental textures (see below). These are gen erally less than 150mm wide and comprise less than 5% of the int. Qz-Cb (cal) veins are widespread throughout. At least two generations are noted. Early cal str are ptygmatically folded or stretch ed along fol. Later Qz veins with irregular margins cut the foliation. These reach 30cm in width and are conspicuous throughout the int. Foliation @ 618.5m	70	Unaltered. Chl-cal minerals are typical of greenschist facies metamorphism. Very weak zones of bleaching are present close to larger Qz veins. Calcite -20%	Py tr as diss cubes up to 5mm.	Typical Rea mafics.
		{596.6-597.3} «LAP. TUFF» Tan to green. A good example of lapilli tuff. Rock consists of 60% sub-angular porphyritic lapilli up to 50mm in length. These are slightly stretched. Aspect ration 2:1. Matrix consists fine grained chl-cal-ser. Frags are weakly sericitized to a yellow-brown colour. Pheno's in the frags are chloritized. Foliation @ 597.2m	85			
		598.8-599.0 White.		Pervasive Qz-Cal alteration. Zone resem bles an irregular vein with screens of chloritic wall rock.	Py tr.	
		620.8-621.5		Massive calcite vein containing inclusions of wall rock material.		
657.80 TO 707.80	«MPYR» Mafic Lapilli Tuff	Dark-Green. A monotonous section of coarse grained mafic fragmentals consisting of 40-60% lens shaped mafic lapilli that range in size from 1 to 10cm. Fragment supported texture. No bedding observed. Lapilli are porphyritic with 5% chloritic phenocrysts. Fragments are a pale yellow green colour compared to the dark green of the matrix. The matrix consists of chlorite with varying amounts of calcite. The rock is weakly foliated. Frags are stretched		The rock is almost unaltered. Slight bleaching of lapilli implies weak ser. Int contains sparse Qz-Cal str (<1%). These are sometimes ptygmatically fold -ed.	None to trace. Py	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		parallel to the fol. Aspect ratio 2:1 to 4:1. Foliation @ 663.2m @ 680.5m @ 695.1m @ 707.5m	 80 84 90 87			
707.80 TO 709.00	«SEMV» Sericitized Mafic Fragmental	Medium Green. Same as the above int. Clasts and matrix are becoming increasingly altered down int. to a pale yellow -green sericite. Frags are pref -erentially altered.		Sericitization of frags. Cal str increa sed to 15%.	Py tr.	
709.00 TO 712.40	«Dol. MV» Dolomitized Mafic Fragmental	Pale Green-Grey. An odd looking int consisting of sericitic mafic volcanic that has been pervaded by coarse Dol and Cal. It does not appear to be a vein - more of a replacement. Contacts are diffuse and irregular. The zone is cut by many sulphide str abd blebs that reach 20mm across. These contain dark green chl.		Pervasive carbonatization. Rocks adjac -ent to this zone are strongly ser and weakly Sil. Specks of pale green mica are present less than 5cm from the marg ins of the zone.	Sulphides veinlets contain: «Gl 3%, Tt tr, Cp 1%, Py 5%»	Sericitization in the previous int may be an envelope around this zone. Assay BCD 18534 709.0-710.4 18535 710.4-712.1 18536 712.1-712.4
		710.4-712.0 Yellow-Grey.		Intense ser has obliterated primary tex tures. Zone contains sheeted yellow ser and chl with numerous well banded chal cedonic Qz veins (to 5mm). These contain 40% white carb. Dol 15%.	Py tr-5% in fol parallel str.	
712.40 TO 732.80	«MAFIC FLOW»	Medium Green. A homogeneous massive unit with good igneous textures. The rock is a fine to medium gra ined mafic porphyry, containing 50% euhedral feld-spar crystals in a fine, dark grey groundmass. The pheno's exhibit a weak prefered orientation parallel to the fol. Grain size diminishes down int from 3-5mm at top to 1mm near base. They increase to 75% near bottom also.		Phenos are sausseritized. Some have rim s of yellow sericite around med green cores. Dol veinlets fill tension gashes These reach 30mm in width. The upper contact has poatchy sil.	No sulphides in flow.	Assay BCD 18537 712.4-712.7
		{712.7-712.9} «SMS VEIN» A dol vein with 30-40% coarse sulphide as irregular patches. Foliation @ 713.2m	 80	Qz-Dol vein.	«Gl 20%, Sph 1-3%, Cp 3%» Sulphides occur in patches of late silicification.	Assay BCD 18538 712.7-712.9 18539 712.9-714.2
		712.9-714.2 A zone of extreme alteration and replacement of the mafic flow by Qz and Dol. Rock has a patchy texture with diffuse or nebulous areas of Qz or Dol. Qz str contain diss Gl, Sph and Cp. ----------Sharp Contact @ 730.4m	 78	Patchy Qz-dol replacement of mafic flow Sheeted yellow ser.	Gl 5%, Sph 1%, Cp 3%. Sulphides occur a s diss. blebs and semi-massive pods in siliceous zones. Diss Py is present as evenly spaced cubed up top 3mm on a side. These have well developed strain shadows.	
		730.4-731.5 Yellow-Grey. A fine grained, massive unit with a crowded micro-porphyry texture. 1mm			Brittle fractures filled by sugary Qz. Rock weakly ser.	Py 1-3% in more siliceous zones. e.g. at 730.7m. Elsewhere Py - trace.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		Phenocrysts make up 80-90% of the rock. Perhaps this is a marginal phase of the flow. 731.5-732.8 Coarser grained porphyry interval. See above description.				
732.80 TO 737.10	«MAFIC FLOW»	Grey. A fine grained, massive unit with a fine grained porphyry texture. These units may repre-ent mafic flows in the fragmental sequence. Finer sections may be chilled flow bases. There is no appreciable foliation. Fragmental sections are noted. Lapilli are similar in composition to the porpyhyry intervals. 734.3-734.9 Lapilli Tuff. 735.6-736.5 Lapilli Tuff		Finer grained sections are essentially unaltered. Qz str cut the unit. Weak sericitization.	Diss Py 1% Py tr-10%	
737.10 TO 790.70	«MPYR» Mafic Lapilli Tuff	Dark Green. A typical section of mafic fragmental. This interval consists of a fragment supported mafic lapilli tuff with narrow zones of lapilli breccia. Lapilli range in size from 15 to 50mm and are flattened along foliation (aspect ratio - 3:1). Frags are moderately bleached to a yellow grey colour. The matrix is very dark green and con sists primarily of secondary chlorite with narrow sericitic and pyritic zones. Foliation @ 753.5m 771.8m Fine grained well foliated sections may represent asby tuff layers.	 83 86	Weak ser of lapilli. Wide spaced Qz and Cb str and veins. Larger veins have si l enbvelopes. These contain elevated Py concentrations (to 10% - e.g. at 755.0 m)	Py tr (to 10%)	
790.70 TO 846.50	«STWK» Sulphide Stringer Zone.	Yellow Green. Essentially the same mafic unit as in the previous int. In this section the degree of alt has increased significantly. Lapilli are pervasively sericitized to a pale yellow green col our. Matrix material is heavily to moderately chlo-ritized. Massive sulphide str. with Gl, Sph, Cp and Py occur at approximately 50 cm intervals. Veins range from 1 to 15cm in width. Sulphide text ures are mainly granoblastic in the veins. Gangue minerals consist od Qz, Dol and Cal. Veins para-lell and cut the foliation. Late narrow Qz str an re foldes. (e.g. at 821.3m) Foliation @ 802.4m @ 815.5m @ 836.0m 793.4-795.2 Pale Brown.	 55 70 72	Mod to strong chl alteration of the matrix to a dark green or black colour. This is particularly strong close to th e sulphide str and veins. Frags. modera tely ser . Strongly alt mafic fragmental. Rock is	Str and veins of semi-massive to massive sulphide. Average vein composi tion: Py 70%, Gl 5-10%, Sph 3% and Cp trace. Veins total approximately 3% of the interval. Patchy Py (1%) replaces fragments.	Stockwork zone? Possible zone of feldspathic alteration

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
				bleached to a pale brown colour. Some frags are selectively pyritized. A pale blue to green mineral occurs as narrow veinlets. This mineral is extremely soft (~2) and non micaceous. Gypsum is a likely candidate. 5% sugary Qz str also present.	Diss. Py (tr) in Qz str.	?
		{797.7-798.6} Pale green-Brown. «Breccia Zone». Tectonic breccia healed by late silica.		A zone of irregular Qz veining and mod. sil. Veins contain sheets and spots of Chl. Dol comprised 15-20% of the Qz veins.	Py trace.	
		835.2-835.4 White. Qz-Dol Vein. Massive Dol-Qz vein. Late transverse fractures healed by late silica.		Massive Dolomite.	None.	
		------Sharp Contacts------	40			
846.50 TO 884.60	«SER MV» Altered Mafic Fragmental	Yellow-Green. A strongly altered section of mafic lapilli tuff. Lapilli are bleached by pervasive ser and carbonate. Matrix is well chloritized to a fine black rock. This contains aggregates of granoblastic pyrite. Zones of patchy grey silicification over 20-30cm intervals are noted. Py str with traces of Gl and Sph are widespread. These average 10-20mm in width.		Pervasive ser and mafic fragments. chloritized matrix. Localized silica replacment. Late white Qz-Dol veins up to 25cm in width occur at irregular intervals. Calcite is present as stringers and patches.	Abundant Py in chloritic matrix. It occurs as dense disseminations. Py-Chl str. form a weak stockwork throughout. «Py 15%, Gl tr, Sph tr»	
		{851.4-851.7} «SMPY» A vein of semi-massive Py with well developed granoblastic textures. Py crystal aggregates show evidence of brecciation on a small scale. Matix consists of strongly sericitized mafic volcanic with stringers and interstitial silica.		Strong sericitization and moderate sil of mafic material in pyrite vein zone.	«Py 40%, Sph tr-1%, Gl tr»	Assay 18564 851.4-851.7
		Upper Contact-----	40			
		841.7-841.9 Qz-Dol Vein. A cream coloured vein with late Qz filled transverse fractures. Stylolitic partings of ser and chl. Sharp contacts:		None associated with the vein.	None.	Stockwork?
		Upper Contact-----	84			
		Lower Contact-----	55			
		874.5-874.8 Qz-Dol Vein. Identical to the above vein. Upper Contact	40			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
884.60 TO 906.60	«ALT. MV» Altered Mafic Fragmental	Yellow-Green. A more intensly altered section of m afic lapilli tuff. Style of alteration varies down interval from sericitic to chloritic. Coarse fragmental sections are preferentially sericitized . Other areas are Chl-Py-Qz altered. Py str and diss Py are concentrated in chloritic sections. Py ranges from 1-20%. It occurs as fine grained patches and diss crystals. Foliation @ 887.6m	75			Geochem 18565 884.1-885.6 Assay 18566 885.6-885.9 Geochem 18567 885.9-887.4
		‡885.5-885.9‡ «SMS VEIN» A Qz-Dol vein with diffuse and irregular contacts. Vein appears to be fragmented by foliation. Core of vein contains splashes and blebs of Cp and Gl. Sph is fine grained and disseminated throughout.		Chlorite spots near margin of vein. Dol alteration of adjacent wall-rocks.	«Cp-5%, Gl-20%, Sph-20%»	
		899.2-899.6 Qz-Dol Vein. Pale Grey. Vein showing late transverse quartz filled fractures. These cut vein margins and extend into wall rocks. Lower Contact----------	80	Patches of Chl occur in vein - possibly wall rock material.	Py trace.	
		899.3-900.4 Qz Vein Pale grey. A fine grained, banded sugary quartz dol vein. This unit resembles a banded chert. Bands are separated by stylolitic partings. These are perpendcular to CA. Fine grain ed texture is unusual - perhaps recrystallization. Banding----------	90			
		‡903.4-905.5‡ «FLT» A zone of fault gouge and Qz veining. Upper and lower contacts are marked by ru bbly gouge. Vein occupies 60% of the interval.		Chl alteration		
906.60 TO 997.30	«MPTR»	Moderately to well foliated mafic fragmental		Chl-Cal . Greenschist metamorphic assem	Py trace.	
TO 992.00	Mafic Fragmental	containing variable proportions of lapilli sized clasts. These are difficult to identified as they are not bleached. Mineralofy of this interval is essentially dominated by chl and calcite. Greenschist assemblage.		blage.		
		Calcite occurs as irregular patches in the matrix and as distinct str with and without Qz. These ran ge from <1 to 10mm in width and cut the foliation. Coarser veins have calcite selvages and Qz cores		Calcite makes up 30% of the rock.		
		Foliation @ 925.4m	85			
		@ 949.8m	80			
		@ 977.2m	85			

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

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB		COMMENTS
BCD18478	13.00	13.20	0.20	0.620	4.83	3.39	27.8	0.28																
BCD18481	112.85	112.95	0.10	0.089	4.74	0.68	6.4	0.03																
BCD18483	193.90	194.20	0.30	0.428	5.42	3.50	16.2	0.02																
BCD18484	194.20	195.50	1.30	0.016	0.09	0.18	4.3	0.02																
BCD18507	342.75	343.00	0.25	0.120	0.25	0.06	4.2	0.04																
BCD18497	349.50	349.90	0.40	0.015	0.07	0.03	2.1	0.27																
BCD18498	349.90	350.10	0.20	0.019	7.15	0.63	58.9	0.07																
BCD18534	709.00	710.40	1.40	0.014	0.02	0.12	1.4	0.03																
BCD18535	710.40	712.10	1.70	0.015	0.02	0.06	1.6	0.03																
BCD18536	712.10	712.40	0.30	0.002	0.01	0.02	1.8	0.01																
BCD18537	712.40	712.70	0.30	0.006	0.09	0.06	1.7	0.01																
BCD18538	712.70	712.90	0.20	1.140	2.59	4.57	27.8	0.03																
BCD18539	712.90	714.20	1.30	0.013	0.07	0.09	1.9	0.02																

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD18476	10.50	12.00	1.50												73	79	36		38	1.4								
BCD18477	12.00	13.00	1.00												31	162	33		29	1.8								
BCD18479	13.20	14.00	0.80												29	510	74		21	1.8								
BCD18480	14.00	15.10	1.10												62	350	27		36	1.7								
BCD18485	246.40	247.50	1.10												325	2650	2400		10	2.7								
BCD18486	299.70	300.50	0.80												550	59	250		5	1.5								
BCD18487	300.50	301.90	1.40												29	1680	460		5	3.1								
BCD18488	301.90	303.40	1.50												10	93	122		5	0.8								
BCD18489	326.70	328.20	1.50												128	1210	1040		5	5.7								
BCD18490	328.20	329.70	1.50												815	2000	1135		65	27.7								
BCD18491	329.70	331.10	1.40												16	64	56		20	0.9								
BCD18492	331.10	332.60	1.50												38	38	51		5	0.6								
BCD18493	332.60	334.10	1.50												8	31	49		5	0.6								
BCD18494	334.10	335.90	1.80												11	74	62		20	0.7								
BCD18495	335.90	336.80	0.90												176	3300	7800		35	4.3								
BCD18496	336.80	337.80	1.00												255	5350	4550		25	7.8								
BCD18508	348.00	349.50	1.50												81	275	75		20	1.6								
BCD18499	350.10	351.60	1.50												86	54	102		5	0.8								
BCD18501	351.60	351.60	0.00												100	44	104		10	0.8								
BCD18502	359.20	360.10	0.90												30	29	195		20	1.2								
BCD18503	360.70	362.20	1.50												32	43	280		35	1.5								
BCD18504	362.20	363.70	1.50												38	36	495		40	1.7								
BCD18505	363.70	365.20	1.50												68	51	350		25	2.4								
BCD18506	365.20	366.70	1.50												49	25	120		25	1.9								
BCD18509	373.90	374.30	0.40												75	37	68		20	1.1								
BCD18510	400.40	400.60	0.20												7	20	27		5	0.9								
BCD18511	403.20	404.70	1.50												26	51	24		55	0.9								
BCD18512	404.70	406.20	1.50												9	13	20		15	0.8								
BCD18513	406.20	406.60	0.40												33	30	22		65	0.9								

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG255 | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER:
CLAIM NUMBER:
LOCATION:

PLOTTING COORDS GRID:
NORTH: 900.00N
EAST: 10000.00W
ELEV: 1360.00

ALTERNATE COORDS GRID:
NORTH: 9+ 0N
EAST: 100+ 0W
ELEV: 1360.00

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 449.90m
START DEPTH: 0.00m
FINAL DEPTH: 449.90m

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

DATE STARTED: April 13, 1989
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: ATLAS DRILLING Ltd.
CASING: 3m LEFT IN HOLE
CORE STORAGE: Barriere

PURPOSE: To test the Barite and Sam zones on line 100+00mW down dip from 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
30.50	-	-89° 0'	ACID			-	-	-	-	-	
60.96	-	-86° 0'	ACID	OK		-	-	-	-	-	
93.20	-	-85° 0'	ACID	OK		-	-	-	-	-	
123.70	-	-84° 0'	ACID	OK		-	-	-	-	-	
160.30	-	-83° 0'	ACID	OK		-	-	-	-	-	
212.10	-	-81° 0'	ACID	OK		-	-	-	-	-	
263.90	-	-81° 0'	ACID	OK		-	-	-	-	-	
291.40	-	-81° 0'	ACID	OK		-	-	-	-	-	
321.80	-	-80° 0'	ACID	OK		-	-	-	-	-	
382.80	-	-78° 0'	ACID	OK		-	-	-	-	-	
447.90	25° 0'	-84° 0'	TRO-PARI	OK	DOWN DIP???	-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 3.00	«CASING»					3.0-3.2 Rubble zone - possibly till.
3.00 TO 14.60	«MT» Mafic Tuff	Dark Green. A well foliated mafic volcanic containing anomalous amounts of calcite. Cal occurs as replacements of the host rock. Textures suggest that the alt occurred before the main foliation. Matrix consists of fine grained chlorite. Str. and veins of Qz-Cal are common.		Pervasive cal alt. Cal decreases from 60% close to the top of the int to <10% at the base. Cal-Qz veins up to 25mm are noted. Traces of leucoxene occur on the fol planes.	Granoblastic Py occurs in zones of massive cal. Crystals are fragmented. Av. grain size - 2mm. «Py tr»	
		Foliation @ 14.2m	54			
		14.2-14.3 Cal-Qz vein. Consists of 80% Cal and 20% Qz. Irregular contacts parallel CA.			Py tr-3%	
14.60 TO 20.80	«MPYR» Mafic Lapilli Tuff	Medium Green. A good mafic lapilli tuff. This rock consists of a fragment supported lapilli breccia. Lapilli average 30mm in short dimension. They vary from rounded to sub-angular and consist of tuffaceous material. They are typified by chloritic streaks that have shard-like outlines. Rare fragments containing up to 20% 5mm Qz amygdules are also noted.		Bleaching of Lapilli to a pale yellow-green colour. Pervasive Cal in matrix (to 20%). Abundant Cal-Qz str to 25mm.	«Py tr»	
20.80 TO 32.40	«MT» Mafic Tuff	Medium Green. A massive, tuffaceous unit that appears to be similar in composition and texture to the lapilli in the previous int. Textures vary from massive to fragmental. Matrix and frags of similar composition. Unit is typified by chloritic streaks and lenses up to 10mm in length that have shard-like outlines. Lapilli average 30mm in long dimension. Moderate elongation parallel to the fol		Rock is rich in calcite (>20%). Most occurs in the groundmass. Also occurs in in 20-30mm Cal-Qz veins.	Py tr	
		Foliation @ 23.4m	58			
		{29.5-32.4} «ALT MT» A dramatic change from weakly alt to strongly alt rock. This int contains large lapilli sized amygdaloidal or porphyritic fragments that are pale brown and extremely hard. Their margins are irregular. The pale brown colour appears to be a selective alteration. The matrix is well foliated and contains NO Cal. It consists of pale brown ser and leucoxene (?).		Brown fragments are cut by Qz-Dol str. Detached vein segments are truncated by foliation (i.e. predate fol). Patches of grey Dol make up 5% of the Int. 1-5mm Sol porphyroblasts are common.	«Py 3%» Increases in conc down int.	Sudden loss of Cal below 29.5m
		Foliation @ 31.0m	45			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
32.40 TO 34.80	«QV» Quartz Vein	White. A highly smashed up Qz vein. It contains 20 -40% Dol as sugayr masses. Qz rich are intensely fractured. The vein contains grey, silicified sect ions that may be altered wall rock remnants. These are cut by vuggy Qz str up to 10mm wide. Crack and heal textures noted. ----------Upper Contact----	25	Vein contains green mica, particularly near upper contact. It is also present	«Py 3%, Tt tr, Cp tr-1%» Pyrite occurs as fragmented crystals in -hedrite are noted.	Geochem BCD 12615 30.9-32.4 12616 32.4-33.9 12617 33.9-34.8
34.80 TO 38.00	«PY. MV» Pyritized Mafic Tuff	Tan to Grey. An intensely altered section of mafic lapilli tuff. Rock is shot through with QZ-Dol st r. Wallrocks are bleached to a pale brown and moderately pyritized. Yellow-brown sheets of leucoxene (?) or ser are conspicuous between vein -ed sections.		Multiple stages of irregular Qz-Dol str Weak ser +- leucoxene.	Subhedral Py crystals to 10mm. «Py 5%, Cp tr» Cp occurs as isolated splashes in the veins.	
		{37.4 38.0} «SMS VEIN» Qz-Dol vein with 20-40% sul phide. Vein is complex with several stages of dep osition. Sulphides occupy late fractures cutting Qz-Dol sections.		Fuchsite and leucoxene are abundant in sheete within the vein. Wall rocks are silicified and dolomitized.	«Tt 5-10%, Cp 3%, Py 10%»	Geochem BCD 12618 34.8-35.8 12619 35.8-37.4 Assay BCD 12620 37.4-38.0 38.0-38.7 Recovery 60%. Core lost at bottom of vein.
38.00 TO 111.90	«MPYR» Mafic Lapilli Tuff	Med-Dark Green. A matrix supported lapilli crystal tuff Rock composed of 10-20% pale grey porphyritic or amygdaloidal lapilli in a chloritic matrix. Lapilli average 40mm in long dimension. Moderate flattening along Fol. (aspect ratio 3:1). Lapilli are quite calcite rich. Foliation @ 62.2m @ 94.1m @ 105.0m	50 60 53	Weak to none. Calcite is restricted to lapilli and rare str.	«Py tr»	
		{74.7-75.6} «SIL. MV» Green Grey. A zone of pervas ive Sil. of the mafic fragmental. Qz str with 5cm envelopes parallel and cut foliation.		Silicified over 60% of the Int. Qz str with silicified envelopes. Patches of brown ser at margins of silicification.	SMS str at 75.0m. Qz-Dol matrix with 20% Sph., 3% Gl, 5% Py.	
111.90 TO 147.30	«SER. MV» Sericitized Mafic Lapilli Tuff	Yellow-Grey. Same lithology as the previous int. Here it is becoming progressively sericitized dow hole. At top of Int, mafic lapilli are preferenti ally altered. The lower third of the int (i.e. from 135.8m) is increasingly Dolomitized, with knots and patches of cream coloured Dol. Green mica is conspicuous in this int.		Increasing Ser and Dol down int. Dol occurs as rounded porphyroblasts up to 25mm in diameter. These give rock a spo tted appearence below 135.8m. Green mica abundant between 124.2 and 138.3m.	«Py 1-5%» in Qz-Dol veins and as diss eminations.	
		{121.8-128.1} «XL Tuff» A crystal lithic tuff composed primarily of fine lapilli to ash sized		1-3mm ser envelopes. Dolomite veins at	Py tr.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		lithic fragments. Crystal fragments, mainly plagioclase are also noted. The rock has distinctive chloritic lenses that vary from <1 to 30mm in length. These parallel fol.		127.5 and 129.7m. These occur within a zone of increased sericite alt.		
		{134.5-138.3} «ALT. MPYR» Yellow Green. Mafic Lapilli Tuff with strong carbonate alteration. This unit is distinguished by an anomalous amount of fuchsite. It occurs as sheets and streaks along fol planes. Matrix is pervasively dolomitized to a blotchy pale grey.		Intense dolomite alteration. Matrix is pervaded by grey ferroan dolomite. Original lapilli are almost obliterated. Fuchsite on fol planes.	«Py 5%» as disseminations, particularly in the lapilli.	
		138.3-149.3 ----------Sharp Contact @ 147.3m	50	Intense dolomitization of lapilli tuff. Dol knots give rock a spotty texture. Dol porphyroblasts up to 30mm across.		137.8-138.3 Qz-Dol vein cuts core at 20 degrees to CA.
147.30 TO 176.50	«CHT+ARG» Interbedded Chert and Argillite.	Dark grey to black. A highly contorted section of black and grey chert and silicified graphitic argillite. Tight similar tyle folds contort bedding. Hingees are isolated by fol parallel shear planes. Bedding on a 1-5cm scale. Pale grey beds are variably dolomitized. Degree of alteration varies from sparse, euhedral dol porphyroblasts to complete replacement of argillite layers Folds on a 10-15cm scale. Foliation @ 152.5m	50	Variable dol alteration of argillite beds. Euhedral grey dol crystals up to 15mm across. These are zones from Fe poor in the cores to Fe-rich at the margins. Vein like zones of coarse dol contain up to 10% Py.	«Py tr-10%» Higher concentrations in Dol rich zones.	Chert 40% of interval.
		{153.0-153.5} «GREY CHT» Massive banded grey chert				
		{154.5-159.8} «CARB. ARG» Two different carbonates replace sediments. Grey subhedral, medium grained dol replaces most of the matrix. This is Fe-rich. White, euhedral porphyroblasts of Fe poor Dol occurs in vein-like zones.		Complete replacement of seds by Fe-rich and Fe-poor Dolomite.	«Py 1-3%» concentrated in zones of coarse dolomite.	
		{163.4-164.0} «QZ-DOL VEIN» Massive Qz-Dol vein containing equal amounts of each mineral. Dol occurs as bladed crystals growing from the vein margins. These are Fe-rich (stain blue). ----------Upper Contact--	15			
		{166.4-166.7} «FLT» Rubbly Gouge zone in argillite				
		{165.8-166.2} Qz vein Upper Contact	50			
		{167.0-168.6} «QZ-DOL VEIN» White vein composed of 80% Qz and 20% Dol. Dol occurs as euhedral to subhedral crystals that appear to fill voids in				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		the Qz. Vein contains sheets of SERT - alt argillite? ----------Upper Contact--	80			
		{168.6-176.5} «CHT+ARG» Pale Grey. A sheared section of chert with minor interbedded argillite. Chert is disrupted by fol parallel shears resulting in a lensoid banded texture. Lower down, argillite is more abundant and has acted as a locus for shearing. This has resulted in a pseudo breccia texture, with grey chert lenses isolated by argillite. True breccia is developed over narrow ints (e.g. @ 174.0).		Heavy Dol alt, particularly in the cherty sections. Dol occurs as spots and closely packed porphyroblasts.	«Py 3%» as fine grained str. along fol planes. Coarser granoblastic Py occurs in Qz str.	Shear Zone.
176.50 TO 189.65	«BRX» Breccia Zone	Dark Grey. A polymictic breccia unit composed of angular fragments of argillite, grey chert, black chert, sericitic tuff, massive pyrite and Qz vein. Clasts range in size from <1mm to 75mm. Good evidence for a tectonic origin shown by rotated sericitic tuff fragments. This implies a post foliation age.		Strong Dol alt of the matrix only. It occurs as spots of variable size (1-5mm) that coalesce to form massive dol zones (e.g @ 185.4). Qz-Dol str near lower boundary of int.	«Py tr-5%» Highly variable amounts, mostly as disseminations in matrix. Rare massive py clasts may have been syngenetic sulphide.	
		Fabric @ 179.5	60			
		{186.7-187.9} «QZ-DOL VEIN» White. A barren Qz-Dol vein containing 90% Qz and 10% Dol. Vein has sharp, irregular contacts that appear to interfing er with the wall rocks. A pink tinge is present close to the lower contact.		None.		
189.65 TO 198.90	«GREY CHT» Banded Grey Chert.	Medium Grey. Lensoid banded grey chert with a minor argillite component. This unit is quite shea red by fol parallel shear planes. Lenses of chert are highly fractured on a small scale. Sericitic material is abundant in lower 50cm where it occurs as well foliated interbeds or as a matrix to cherty lenses.		Sericitic sheets are present on fol planes. These appear to be altered argi llite remnants. Dol is presentin moderate amounts as fine grained patch- es between chert lenses.	»Py tr-3%» as disseminations. Up to 155 over 5cm intervals. e.g. at 191.5m	
198.90 TO 228.10	«ARG+CHT BRX» Brecciated Argillite and Chert.	Black to grey. An argillite dominated section with approx. 20% grey chert bands. This int is highly sheared and variably brecciated. Textures vary from lensoid banding to true, angular rotated breccia fragments in a black argillite matrix.		Strong Dol alt. Dol is Fe-poor and occu rs as spots and larger porphyroblasts (to 15mm) that form almost massive Dol over narrow sections. Most intense between 206.0 and 209.1m	«Py tr-1%» Massive Py @ 212.4m over 3cm.	
		203.6-204.1 Drag fold. Foliation parallels CA				
		216.2-216.3 Breccia. Ploylithic breccia				
		{216.3-216.9} «Grey Chert» Massive lensoid banded grey chert.				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		⌊220.0-228.1⌋ «BRXI» A polymictic breccia similar to the previous breccia unit. It consists of angular clasts from 1mm to 35mm across. Fragments of grey chert, black chert, sericitic tuff, argill -ite and fine grained pyrite noted. Matrix is high ly dolomitic and pyritic. ----------Sharp Contact @ 228.1m	80	Large porphyroblasts of Dol (to 15mm) spotted throughout the int. At 221.1m these make up to 80% of the rock. They are compositionally zoned from Fe poor to Fe-rich outwards.	«Py tr-1%» as disseminated crystals. Rare massive clasts also present.	
228.10 TO 240.60	«SERT» Sericitic Tuff	Yellow-Grey. A typical int of sericitic tuff and chert. This unit strongly resembles the preceeding chert-argillite section. It is moderately to strongly foliated and shows primary layering in isolated fold closures (e.g. @ 227.9m). Py content is higher than in the chert argillite section above (Py 3-10%). Most occurs as stringers along the foliation planes. Also in fractures in the cherty sections. Foliation @ 226.5m @ 229.7m	70 60	A significant decrease in Dol content. Where present it occurs as fine str with Qz. Original argillaceous sections completely sericitized.	«Py 3-10%» as Fol parallel str and fine grained patches up to 30mm across.	
240.60 TO 250.30	«ARG» Argillite	Dark Grey to Black. A well laminated section of in terbedded argillite and pale grey siltstone. Chert makes up less than 1% of int. Unit is isrupted by fol parallel shears. Primary laminatio mostly transposed.		None. Several Qz-Dol veins present.	Py tr	
		⌊243.9-244.6⌋ « QZ-DOL VEIN». White. 50:50 Qz and Dol. Contains stylolite-like partings of graphitic material. Vein cut by a fault at lower contact.		None.	Py tr, Sph tr. One bleb of blackjack noted.	
		246.3-247.3 Another Qz-Dol vein, similar to the above example. Upper Contact @ 246.3m	35		Py tr.	
		⌊248.0-250.3⌋ «QZ-DOL VEIN». Dol comprised 40% of the vein. In this instance the dol is a grey colour rather than the usual creamy white. Vein contains graphitic partings. Upper Contact @ 248.0m	10			
250.30 TO 308.20	«CHT» Banded Grey Chert	Black to Dark grey. A highly contorted section of banded grey chert with very minor argillite. The rock is highly deformed by buckle style folds that resemble soft sediment features. No penetrative foliation. Fine grained cherty argillites near top		No alteration. Minor Qz veining and silica remobilization.	Sulphide veins throughout section. These range from 1-5cm across and conta in granoblastic Py with straw coloured Sph and Gl. «Py 5%, Sph tr 3%, Gl tr, Tt ?»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		of the int contain numerous semi-massive sulphide veins. The remainder of the chert is moderately well mineralized, mainly by 1-5cm sulphide veins.				
		{250.3-253.0} «PY ARG» A finely interlaminated black argillite and grey chert unit. Chert beds range from 1-3m in thickness. Py occurs as laminations in the argillite beds. It looks syngenetic.			Semi-massive sulphides between 250.3 and 250.8m. «Py 40%, Sph 1-3%, Gl tr»	
308.20 TO 311.80	«CHT BRX» Black Chert Breccia.	Black. A sharp transition to a fine grained black chert unit that contains fine grained laminated Pyrite. The top part of the int is fairly massive with numerous Qz str. Lower down the unit is brecciated and healed by grey Dol and Qz. Breccia fragments are very rounded, not angular. This is unusual. Core rubbly near the base of the int.		Qz and Doll fill fractures in the chert They also form matrix to brecciated sections.	«Py 3-5%» as fine grained laminae.	
		{309.1-310.5} «CHT BRX» Chert Breccia.				
311.80 TO 331.60	«MUT+CHT» Muddy Tuff with Grey Chert.	Bronze to Grey. A typical section of Muddy Tuff. This int consists of a well laminated pyritic sediment that is interbedded with black and grey chert The muddy tuff is quite sericitic. Bedding is on a 1-5cm scale.		Variably altered. Weak to moderate ser of non cherty sections. Patches of intense dol alt (e.g. @ 320.0m). Some Qz veins.	«Py 10-25%»	
		Foliation @ 313.1m	30			
		@ 317.9m	0			
		@ 316.7m	25			
		@ 320.5m	40			
		{313.1-314.5} «CHT» A disrupted banded chert unit showing a high degree of fracturing. Many fractures filled with fine grained Py.				
		{314.5-316.0} «ARG» A graphitic argillite section with a high degree of folding. Upper portion is cherty.			«Py 5-10%»	
		319.6-319.7 Massive Pyrite. Probably a vein as it truncates a Qz-Dol vein at its lower contact.			Py 80%	
		{326.4-327.2} «QV» A moderately fractured vein. Dol comprises 10-15%.		Sericite occupies fractures in the Qz. It has a distinct mint green tint.	«Py 3%» in fractures.	
		{327.2-327.7} «FLT» A rubbly gouge zone.				
		------------Sharp Contact @ 331.6m	40			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
331.60 TO 336.10	«QZ STR ZONE»	Bright Green. A zone of intense Qz veining and Fuchsite-dol alteration. Two ages of veining noted An earlier Dol(Grey)-Qz vein set is cut by later White Dol vein set. Wall rocks are variably sil, carbonatized and pyritized. Original lithology unidentifiable. Foliation @ 333.6m	45	Fuchsite-dol alteration of wall rocks around Qz-Dol str.	«Py 5%»	
336.10 TO 343.70	«DOL. MV»	Dark Grey. A medium grained massive lithology with a distinctive spotted texture. It is unlike the previous sediments. Textures are more indicative of a mafic volcanic or dyke. It is composed primar ily of fine grained (1mm) crystals of dolomite. These make up 70% of the rock. The groundmass is non-foliated and consists of fine grained chl and ser. The overall look of the rock is similar to the dykes seen in RG-254.		Strong pervasive dol alteration giving the rock a spotted appearence. Qz str are surrounded by narrow (1-5mm) zones of sil.	Granoblastic Py aggregates up to 5mm are disseminated throughout. «Py 1%»	Possibly mafic dyke?
		{341.2-341.9} «QZ-DOL VEIN» White. Qz-70%, Dol-30% Dol is concentrated close to he vein margins where it occurs as elongated crystals oriented perpendic ular to the vein margin. Central part of the vien is Qz rich. Vein sub-parallel to CA.		Strong sil adjacent to the upper contact.	Py tr. Possible Tt at 341.4m.	
343.70 TO 351.60	«QV»	A massive white Qz vein with variable amounts of coarse, tan coloured carbonate. Irregular fracture -s in the vein host str of pale green ser and grey dol		Wall rock alt between 343.7 and 344.7 consists of dol replacement. Brown and grey dol form a coarse stringer zone. Fuchsite occupies fractureds in the vein and wall rock.	«Py tr» A selvage of a hard grey-brown mineral is present near the lower contact. This mineral could be leucoxene?	
		350.7-35.1. Pale Green. A section of highly altered rock within the Qz vein. Primary lithology has been oliterated by alt. Rock consists of a medium grained mass of Dol and fuchsite.			Py tr-3%	
		351.2-351.6 Same as above.				
351.60 TO 378.40	«MPYR» Mafic Lapilli Tuff	Yellow Grey. A moderately altered interval of mafic lapilli tuff. Lapilli are coarse grained (Av. 50mm) and bleached to a pale yellow-brown. Most are undeformed. Matrix is variable silicified and dolomitized. Brown leucoxene is conspicuous on fractures. Frags comprise up to 25% of the rock Matrix supported.		Pervasive ser of lapilli. Chl, ser, dol alteration of the matrix. Patches of silicification close to Qz-Dol str.	Py replaces lapilli cores. Also occurs as fine str that cut lapilli.	
		{358.7-359.0} «QV» Qz-Dol vein with 10cm of mass- ive Pyrite at lower contact. Py is fractured and healed by grey Qz. ----------Upper Contact--	45		Massive Py envelope on lower contatc of the vein. «Py 20%»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		{361.5-362.0} {376.5-377.4} «QZ_DOL VEIN»		Intense sil and dol alteration in a zone sub-parallel to CA.	Py 1-3% as crystal aggregates.	375.7-377.9 Fuchsite envelope around Qz Dol vein at 376.5-377.0
378.40 TO 407.50	«ALT. MPYR»	Green to Brown. Same as above interval but much more altered. It is typified by zones of Qz-DOl-Fuchsite alt associated with Qz veins. Yellow-Brown sericite alt occurs away from these zones. Foliation @ 378.7m @ 392.0m	45 45	CHl-Dol alt is present throughout int, This occurs away from Qz-Dol veins. Nearer to veins, Fuchsite is prevalent. Localized zones of yellow-brown ser are separate green mica zones.	Qz str are abundant throughout. These contain traces of Gl, Sph and Tt over -2cm ints.	
		382.5-386.6		Fuchsite alt gives the rock a bright green colour.	Zone containes patches of granular Py (to 10%). Blebs of Gl occur in Qz str.	
		386.6-396.8		Yellow coloured int with mainly ser and no fuchsite. This seems to be related to Qz str. e.g. at 388.4-388.9 and 396.3 -396.5.	Blebs of Gl in Qz-Dol str. Py 3-5% as disseminated crystals and str.	
		{392.7-393.4} «QV» Qz-Dol vein with abundant fuchsite. Upper half consists of massive Dol with green mica in fractures. Below vein consists of half Qz and half Dol; also with fuchsite.		Fuchsite conspicuous on fractures in the vein.	Py tr-1%	
		{398.0-398.9} «QZ-DOL VEIN» Same as above vein.				
407.50 TO 449.90	«MPYR» Mafic Lapilli Tuff	Yellow grey. An altered mafic lapilli tuff. Rock consists of 30% coarse lapilli (Av. 50mm). Unstrained, rounded to equant shapes to the fragments. matrix is moderately dolomitized and sil. Lapilli bleached to a pale yellow grey. Brown leucoxene present on fractures. Foliation @ 436.4m	48	Moderately altered. Qz-Dol-Chl altered matrix. Ser altered lapilli. Local zones of Qz-Dol str with silicified margins.	«Py 1-5%» occurring as fine grained whispy str in lapilli. Also crystal aggregates in cores of fragments.	
		437.1-437.8		Zone of pervasive silicification.	Py 5%	
		{438.6-439.9} «BRX» Dolomitized vein breccia with clots of fine grained black chlorite. Py aggregates to 50mm are present. Gl, Sph and maybe Tt are disseminated throughout.		Complete replacement of MPYR by Dol.	«Py 10%, Gl 1%, Sph tr, Tt ?»	
		{443.3-445.3} «QV» A barren white qz vein with 30% dol. Vein contains numerous cavities up to 20mm across. Possibly after carbonate.			Py tr	

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD12620	37.40	38.00	0.60	1.060	4.89	3.26	44.7	0.40	0.05	0.07													
BCD12621	250.30	250.90	0.60	0.464	3.44	2.49	38.2	0.20	0.04	0.02													
BCD12622	250.90	251.50	0.60	0.199	0.77	0.38	28.7	0.06	0.05	0.03													
BCD12623	251.50	253.00	1.50	0.094	0.53	0.43	17.4	0.08	0.03	0.04													
BCD12624	253.00	254.00	1.00	0.207	0.64	1.05	33.1	0.05	0.11	0.04													
BCD12625	254.00	255.00	1.00	0.018	0.07	0.12	2.30	0.02	0.01	0.01													
BCD12551	255.00	255.40	0.40	0.134	2.27	2.09	24.5	0.11	0.05	0.07													
BCD12552	255.40	256.90	1.50	0.026	0.28	0.28	4.6	0.05	0.01	0.01													
BCD12553	256.90	258.40	1.50	0.008	0.02	0.02	0.9	0.02	0.01	0.01													
BCD12554	258.40	259.90	1.50	0.007	0.12	0.05	1.7	0.01	0.01	0.01													
BCD12555	259.90	261.40	1.50	0.021	0.42	0.22	2.4	0.02	0.01	0.01													
BCD12556	261.40	262.90	1.50	0.014	0.06	0.04	0.6	0.03	0.01	0.01													
BCD12557	262.90	264.40	1.50	0.008	0.08	0.07	0.8	0.02	0.01	0.01													
BCD12558	264.40	265.90	1.50	0.024	0.12	0.11	1.6	0.02	0.01	0.01													
BCD12559	265.90	267.40	1.50	0.01	0.04	0.08	0.7	0.01	0.01	0.01													
BCD12560	267.40	268.90	1.50	0.009	0.06	0.02	0.6	0.01	0.01	0.01													
BCD12561	268.90	270.40	1.50	0.007	0.08	0.02	0.4	0.01	0.01	0.01													
BCD12562	270.40	271.90	1.50	0.019	0.13	0.13	1.9	0.03	0.01	0.01													
BCD12563	271.90	273.40	1.50	0.021	0.67	0.21	1.8	0.01	0.01	0.01													
BCD12564	273.40	274.90	1.50	0.007	0.06	0.05	0.6	0.01	0.01	0.01													
BCD12565	274.90	276.40	1.50	0.019	0.85	0.16	1.7	0.01	0.01	0.01													
BCD12566	276.40	277.90	1.50	0.004	0.06	0.04	0.4	0.02	0.01	0.01													
BCD12567	277.90	279.40	1.50	0.021	0.67	0.08	0.2	0.02	0.01	0.01													
BCD12568	279.40	280.90	1.50	0.033	0.76	0.41	5.8	0.02	0.01	0.01													
BCD12569	280.90	282.40	1.50	0.006	0.06	0.04	0.8	0.01	0.01	0.01													
BCD12570	282.40	283.90	1.50	0.005	0.07	0.04	0.4	0.02	0.01	0.01													
BCD12571	283.90	285.40	1.50	0.014	0.66	0.14	2.0	0.02	0.01	0.01													
BCD12572	285.40	286.90	1.50	0.015	0.07	0.12	1.9	0.01	0.01	0.01													
BCD12573	286.90	288.40	1.50	0.032	1.31	0.89	6.4	0.03	0.01	0.01													
BCD12574	288.40	289.90	1.50	0.006	0.03	0.04	1.2	0.04	0.01	0.01													
BCD12575	289.90	291.40	1.50	0.004	0.02	0.01	0.6	0.03	0.01	0.01													
BCD18651	291.40	292.90	1.50	0.007	0.04	0.02	0.7	0.02	0.01	0.01													
BCD18652	292.90	294.40	1.50	0.005	0.12	0.05	0.8	0.01	0.01	0.01													
BCD18653	294.40	295.90	1.50	0.006	0.08	0.02	0.5	0.03	0.01	0.01													
BCD18654	295.90	297.40	1.50	0.006	0.02	0.01	0.6	0.01	0.01	0.01													
BCD18655	297.40	298.90	1.50	0.003	0.02	0.02	0.4	0.01	0.01	0.01													
BCD18656	298.90	300.40	1.50	0.026	0.69	0.27	2.3	0.01	0.01	0.01													
BCD18657	300.40	301.20	0.80	0.038	0.32	0.29	0.24	0.02	0.01	0.01													
BCD18670	437.10	438.70	1.60	0.014	0.04	0.02	1.6	0.02															
BCD18671	438.70	439.90	1.20	0.048	0.92	0.76	5.9	0.05															

Sample	From (m)	To (m)	Length (m)	CU %	ZN %	PB %	AG G/T	AU G/T	SB %	AS %	CU PPM	ZN PPM	PB PPM	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB		
BCD18672	439.90	441.40	1.50	0.032	0.17	0.26	2.2	0.02																

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD12615	30.90	32.40	1.50	33.12	9.99	12.92	12.80	0.92	0.70	9.90	0.63	1.64			61	171			45	43	2.1	184	0.31		3.10	86.07	57	16
BCD12616	32.40	33.90	1.50	11.05	3.58	27.70	14.13	1.63	0.12	6.42	1.66	0.27			55	623			30	164	3.2	517	0.29		3.00	69.89	1	5
BCD12617	33.90	34.80	0.90	14.49	5.02	26.30	12.96	2.08	0.49	6.42	1.32	0.68			76	77			20	93	2.0	145	0.36		3.20	73.36	10	3
BCD12618	34.80	35.80	1.00	19.25	10.08	20.61	11.81	0.01	2.86	11.00	0.57	2.09			289	83			50	144	3.0	95	0.51		3.30	82.18	60	1
BCD12619	35.80	37.40	1.60	30.51	11.82	14.44	11.22	0.23	2.53	9.85	0.42	2.33			25	112			30	175	1.6	112	0.88		4.20	88.54	12	8
BCD18661	326.40	327.20	0.80												7	220			5		0.4	200						
BCD18658	331.60	333.20	1.60												142	120			5		1.1	28						
BCD18659	333.20	334.70	1.50												34	80			5		0.8	30						
BCD18660	334.70	336.10	1.40												35	98			5		1.0	24						
BCD18662	382.50	383.70	1.20												100	500			150		1.4	275						
BCD18663	383.70	385.40	1.70												173	600			100		1.9	530						
BCD18664	385.40	386.20	0.80												198	6350			100		5.2	3900						
BCD18665	386.20	386.60	0.40												107	4100			125		2.4	1770						
BCD18666	386.60	388.10	1.50												130	153			100		1.0	304						
BCD18667	388.10	388.90	0.80												135	2980			210		3.2	2500						
BCD18668	388.90	390.70	1.80												250	2880			210		3.0	3000						
BCD18669	390.70	391.20	0.50												20	138			10		1.2	67						
BCD18669	390.70	391.20	0.50																									

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION:

PLOTTING COORDS GRID:
NORTH: 1000.00N
EAST: 10100.00W
ELEV: 1345.00

ALTERNATE COORDS GRID:
NORTH: 10+ 0N
EAST: 101+ 0W
ELEV: 1345.00

COLLAR DIP: -88° 0' 0"
LENGTH OF THE HOLE: 488.60m
START DEPTH: 0.00m
FINAL DEPTH: 488.60m

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

DATE STARTED: April 21, 1989
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: Atlas Drilling Ltd.
CASING: Left in Hole
CORE STORAGE: Barriere.

PURPOSE: To test the Barite Zone and Sam Zone down dip on line 101+00mW.

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
41.40	-	-88° 0'	ACID	ok		-	-	-	-	-	
62.80	-	-88° 0'	ACID	OK		-	-	-	-	-	
93.30	-	-87° 0'	ACID	OK		-	-	-	-	-	
129.80	-	-85° 0'	ACID	OK		-	-	-	-	-	
179.30	-	-85° 0'	ACID	OK		-	-	-	-	-	
233.00	-	-84° 0'	ACID	OK		-	-	-	-	-	
262.40	-	-84° 0'	ACID	OK		-	-	-	-	-	
282.20	-	-82° 0'	ACID	OK		-	-	-	-	-	
328.00	-	-82° 0'	ACID	OK		-	-	-	-	-	
388.90	-	-81° 0'	ACID	OK		-	-	-	-	-	
407.20	221° 0'	-80° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 4.30	«CASING»					
4.30 TO 17.10	«MT» Mafic Tuff	Dark Green. A fine grained, well foliated mafic volcanic. No visible fragments. Rock is typified by patches, bands and lenses of calcite that become massive over short intervals. These features are most likely veins that have been stretched along the foliation planes. Foliation @ 8.0m @ 13.5m	 50 54	Calcite is abundant throughout the int. It makes up approx. 30% of the rock. Chl is a major constituent of the matrix. This is probably a greneschist metamorphic assemblage. Qz-Cal str are present from 10.8-12.8m. These reach 15 cm in width.	Py tr in Qz-Cal str.	Oxidation on fractures down to 16.1m. Strong limonite staining from 15.8-16.1 m.
17.10 TO 75.90	«MPYR» Mafic Lapilli Tuff	A homogeneous section of mafic lapilli tuff. This rock is made up of 15-20% lapilli sized mafic fragments in a fine grained tuffaceous matrix. Lapilli are a pale grey-green colour with spots and streaks of chlorite (vesicles?). Lapilli are stretched (Aspect ratio 4:1). Maximum length 60mm. Foliation @ 22.8m @ 35.4m @ 58.6m @ 72.9m 27.1-27.3 Calcite vein. Cal-Qz vein sub-parallel to the CA. Centre of the vein contains pinkish cal -cite.	 54 55 63 54 	Strong chl. selvage. Some brecciation of the wall rock at upper contact.	«Py 1%, Sph 3%, Gl 3%»	Hole caved at 43.6m. Reamed and cased to 12.0m. Redrilled from 15.7m (now Box 1). Broken core from 18.4-19.1m. 95% rec in this interval.
75.90 TO 81.70	«SER MV.» Sericitized Mafic Lapilli Tuff	Medium Brown to Green. A moderately sericitized mafic lapilli tuff. The rock is bleached to a pale yellow-brown colour close to the top of the inter val. Becomes yellow-green lower down. Sheeted yellow sericite is present along foliation planes. Bands of fine-grained pyrite also occur along the foliations. These are often lenticular in shape and may represent pyritized lapilli. This ser-icitic interval appears to be an envelope to the vein described below.		Moderately sericitized and pyritic inte rval. Py replaaces lapilli. A broken Dol vein is noted at 79.6m.	«Py 5%» as disseminated crystals up to 1mm across and as replacements of mafic fragments.	
81.70 TO 84.10	«DOL VEIN»	White to Pale Grey. A massive vein composed of 90% sugary dolomite and Qz. The vein shows evidence of multiple episodes of dol deposition. The latest stage cuts earlier ones and contains drusy cavit-ies up to 30mm across. Patches of silicified wall rock are present in the vein at 82.6m. These conta in pale green sericite and brown sheeted leucoxene . A purple, well cleaved mineral is also present as patches throughout the vein. This may be		Sil. of wall rock inclusions in the vein. Sericitic envelope to 50cm below and 5m above (see previous interval).	«Py 1%, Gl 3%, Sph 3%» Sulphides occur in late fractures in t he Dol. Galena has a pinkish or purple hue.	Assay BCD 22029 81.7-83.2 22030 83.2-81.4

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		fluorite.				
84.10 TO 113.00	«MPYR»	Medium Green. Similar to the previous mafic tuff		mainly calcite veining throughout the	Py tr.	
TO 111.30	Mafic Lapilli Tuff	interval. This time it is slightly bleached and contains more calcite. Lapilli are less distinct. They are selectively replaced by calcite and moderately deformed. Foliation @ 94.8m @ 105.0m @ 110.9m	 40 56 56	interval. Calcite occurs as spots, patches and veinlets along the fol planes. Chlorite is dominant in the matrix.		
		{110.5-111.6} «MT» Mafic Ash Tuff. A fine grained interval that may be an original bed. No fragments or crystals noted. Rare chlorite streaks may be crystal remnants.		Weak ser. 111.5-111.6m Intense chl to a massive black coloured rock.	«Py 5-10%» as fol parallel str.	
		----------Sharp Lower Contact------	48			
		{111.6-113.0} «30% QZ-CAL VEINS» A highly veined and broken up interval. Veins of Qz and Cal up to 30mm across criss-cross the interval. Wall rocks are intensely chloritized and weakly sericitized. Veins are discontinuous and irregular in shape. They generally parallel fol. Lower contact marked by a 3cm gouge zone.		Moderate chl and weak ser of wall rocks. Brown leucoxene occurs on the fol planes.	Vein from 112.5-112.7 contains splashes of Cp and galena. «Cp tr-1%, Gl tr, Py 3%»	Assay BCD 22051 111.6-112.5 22052 112.5-112.7
113.00 TO 173.50	«MPYR» Mafic Lapilli Tuff.	Tan to Green. A different mafic fragmental unit from the above. This rock contains fewer but larger fragments. They range from coarse lapilli to blocks (40-90mm). Frags are a pale brown or tan colour and contain up to 5% fine chlorite streaks. Intervals of this material up to 30cm wide may be tuff beds rather than large clasts. The matrix is bleached to a green-grey. This is indicative of weak ser and/or calcite alt. Intensely chloritized ints up to 3m thick are noted. Foliation @ 135.9m @ 148.9	 40 50	Overall bleaching and weak ser. Narrow zones of intense chl alt towards base of the int.	«Py 5%» as fine diss.	
		139.1-139.8 60% Qz-Dol veins. A smashed up zone of bleached mafic fragmental. Cut by a fault at 139.4m		Chl and ser alt of wall rocks within 30cm of vein zone.	Vein between 139.7 and 139.8m contains Sph, Gl and Cp as a 10-20mm massive zone at the upper contact. «Gl1%, Sph 3%, Cp tr, Py 5%»	Geochem BCD 22033 139.1-139.8m
		139.8-143.5 Original textures obliterated by alt.		Highly chl and ser altered mafic pyroclastic. Pervasively chloritized. Sery present as irregular patches that may be lapilli remnants. The rock is shot through with Qz-Dol Str that are brecci	Gl, Sph, Cp and Py are concentrated in the Str zone. SMS veins up to 30mm across are noted at 142.5 and 142.7m «Gl tr-1% , Sph 1%, Cp tr»	Rubbly core from 140.4-141.3m Recovery 85%. Assay BCD 22034 139.8-141.3 22035 141.3-142.3 22036 142.3-143.5

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
				ated and healed by grey Qz. Dol porphyroblasts are noted in non-veined, chloritized wall rocks.		22037 143.5-144.8 22038 144.8-146.3 22039 146.3-147.8 22040 147.8-148.0
		147.8-148.0 Qz-Dol Vein. A vuggy vein with 15% open cavities. Vein consists of 80% Dol with inter stitial grey Qz. -----Upper Contact-------	58	Wall rocks pervasively sil to 20cm from lower contact.	Vein contains patches of Tt in late str Traces of Gl also noted in Sil wall rock.	
		156.0-156.5.		Intense chl-dol alt. Zone cut by Dol-Qz str up to 50mm across. Irregular conta cts. Abundant leucoxene.	Py 1-3%	
		156.5-160.8 A lapilli rich int. Frags from 20-60mm form 40% of the rock. They are angular and undefor med. Rare rounded frags also noted. All contain 20 % rounded Qz eyes or amygdules up to 10mm across.		Frags are ser to a tan brown. Matrix is moderately chl with abundant leucoxene . Intense chl close to the larger Qz-Dol str.	Py 5% as diss crystals in the frags and in the matrix.	
		{160.8-163.6} «CHL ALT» Dark Green.		Intense chl-dol alt. Frags obliterated. Rock contains patches of fine grained dol. These are cut by 1-3mm Qz str.	«Py 5-15%»	Geochem. BCD 22041 160.8-162.3 22042 162.3-163.6
		167.3-167.6 Qz-Dol Vein. A brecciated vein cont-aining slivers of chl wall rock. Vein is 80% dol. Qz occurs as late pull-apart veinlets.		Intense chl alt as envelope to 30cm from margins.	Tt tr. Blebs of Tt occur in the dol. These reach 10mm in diameter. A bleb of brown sph also noted.	Assay BCD 22043 167.3-167.6
173.50 TO 202.90	«DOL. MPYR» Dolomitized Mafic Pyroclastic	Grey. A zone of strongly carbonatized mafic volcan ic. The rock has been almost completely replaced by granular to sugary ferroan dol. Lapilli are pre sent but difficult to see because of the alt. Int is cut by numerous Dol-Qz str that often contain w all rock slivers.		Strong dol alt. Rock contains approx. 50% carbonate as a pervasive replacm-ent. Chlorite occurs in narrow envelope s around veinlets.	Sulphides, principly Py are concent-rated in the more chl rich sections. It occurs as diss crystals, 1-3mm across. Narrow zones rich in Gl, Sph and poss. Tt are noted near dol vein margins. These do not exceed 10mm in width. «Py 5%, Sph tr, Gl tr, Tt ?»	Assay BCD 22044 183.3-183.8 22045 183.8-184.8 Geochem 22046 184.8-185.4
		{197.7-202.9} «SER MV» Same as the above int except for sheeted yellow ser along fol planes.		A sericitic int in the dolomitized mafic rocks.	Py 1%	
202.90 TO 207.00	«SIL ARG» Silicified Argillite.	Black. An unusual argillaceous unit consisting of well fol, black, possibly graphitic material. Unit contains numerous fragmented Qz str that look as if they have been sheared by the fol. Later cross-cutting veins are present at 203.5 and 206.0 m. Foliation @ 203.8m @ 205.5m Narrow zones of breccia are noted (see below):	35 47	Silicification is the only significant alt. This takedss the form of small gre y Qz str. These have been broken up by the fol.	«Py 3%» as fine disseminations in the argillaceous material.	
		{204.1-204.4} «SED BRX» A graded polymictic frag-mental unit containing 3-15mm rounded clasts of grey chert, argillite and sericitic argillite (SERT). Grading indicates a sedimentary origin.			Py 1%. A 30mm SMPY bed at the lower con tact.	
		204.6-204.7 BRX. A polymictic breccia unit contain ing highly sheared clasts of grey chert, qz vein,				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		sericitic tuff and argillite. Looks like a lithic wacke or conglomerate. A 5cm wacke bed occurs at t he top contact of this int.				
		Bedding @ 204.6m	45			
207.00 TO 219.30	«DOL.MV» Dolomitized Mafic Pyroclastic	Med. Grey. A completely dolomitized mafic. It cons ists of spotty to pervasive grey dol with fol para llel sheets of chl and leucozene. Fol has produced a lensoid banded texture in the more dolomitic sec tions.		Intense dol alt. Weak to mod. chl.Dol s ections contain variable quantities of Qz, resulting in a anomalous hardness in places.	«Py 3%» as diss crystals up to 2mm acro ss. These are concentrated in chl rich ints.	Stained section at 216.5m
		219.1 219.3 BRX. An argillaceous breccia int simil -ar to those in the previous int. It contains rounded qz clasts and dol knots. Top and bottom of the int is quite sericitic.		Ser alt at top and bottom contacts.	«Py tr-1%»	
219.30 TO 254.20	«ARG + CHT» Interbedded Argillite and Chert	Black to Grey. A fairly undisturbed, well bedded sequence of argillites (60%) and cherts (40%). In places bedding is transposed by fol parallel shearing. Arg ints contain narrow bands of fine-grained, syngenetic looking Py. This section is folded. Hinges noted at 230.0, 239.2 and 243.7m		Mod. to waek dol alt of argillite bands . Top part of the int is most intensly altered (down to 228.6m). Below this, a rgillites are weakly ser over 10-50cm sections.	«Py tr-1%»	
		Foliation @ 202.8m	40			
		@ 238.4m	60			
		{219.3-227.1} «DOL. ARG BRX» Mod. brecciated.		Arg is totally replaced by Dol over 2-15cm ints.	A fine grained Py clast noted at 222.0m	
		{227.1-228.4} «SMPY» Bronze. An interval of massive to semi-massive Py. Textures range from disseminated at the top to massive laminated at base. Sulphides cut and wrap around masses of grey Dol.			«Py 40%»	Geochem BCD 22047 227.1-228.4
		228.3-228.45 MSPY BRX. Bronze. A brecciated Py sec tion. Good clastic pyrite grains with angular shap es. Grain size ranges from 1 to 5mm. Matrix is mostly dol.			No base metal sulphides noted.	
		{229.9-231.2} «MASS CHT» Banded Grey chert unit. This chert is clean and unmineralized. Good band -ing textures. Fold closure @ 230.0m.		Weak ser gives a yellow-grey colour.		
		236.0-236.4 Silicification. A pervasively sil zone or vein. Contacts are knife sharp. It contains p atches of grey to brown dol and mint green sericite in fractures.		Sil or Qz vein? Zone has a chl envelope to 1cm from contacts.	Py tr	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		{240.1-245.8} «CHT» Pale Grey. A well banded grey chert with only minor (<5%) argillite. Chert is brecciated at the margins of Qz veins that cut the int. These zones contain elevated Py contents. Qz str contain 20-30% white dol.		Patches of sil associated with 5-10cm Qz veins. e.g. at 241.8 and 243.3m.	«Py tr» Increases to 10% in brecciated vein margins.	Fold closure at 243.9m. S type fold verges up hole.
		{250.2-254.2} «DOL ARG» Med to Dark Grey. Pervasive chl-dol altered argillite. In places the rock is completely replaced sugary dol.		Intense dol alt.		
254.20 TO 281.70	«SER ARG + CHT»	Yellow Grey. A variably altered section containing bleached sediments, alternating with black brecciated sections. Possibly an equivalent to the SERT. Bleaching caused by weak ser of the cherty intervals. Foliation @ 256.0m	70			
		255.2-255.7		Sil zone with chl envelope to 20cm. Mod dol alt of adjacent wall rocks.	Py 3-5%	
		{261.0-261.1} «FLT BRX» 262.0-262.1 Fault Zone.				
		{269.6-270.0} «BRX» Black to Dark Grey. A polymictic breccia dominated by chert and argillite clasts. Frags are sub-angular and range from 5-40 mm. Matrix is argillaceous.				
		{270.3-271.9} «CHT BRX» Grey chert breccia with rare sericitic tuff frags. near top contact.		Weak dol alt.		
		{271.9-272.5} «SMPY» Bronze. A fine grained semi-massive to massive pyrite int. Py laminae range from 5-15mm. Separated by chert bands. Py looks syngenetic.		Lower part of the unit contains abundant dol crystals up to 1cm in width.	«Py 40%, Sph tr»	
		275.5-275.6 BRX. Same as 269.6m				
		278.2-278.4 BRX.		Mod Dol alt.	Py tr-1%.	
281.70 TO 292.20	«BRX+SMS»	Grey-Brown. An unusual unit consisting of alternating sections of banded chert and chert breccia. Brecciated ints contain up to 40% angular clasts of grey chert, argillite, fine-grained massive pyrite and sericitic tuff. Matrix supported.		Strong ser of some clasts. Alt is prebrecciation.	Fine grained Py occurs as syngenetic looking bands up to 5cm across. These are partially brecciated. Str containing Gl, Sph, Cp and poss. Tt cut all other lithologies. Most are concentrated	Assay BCD 22051 283.6-284.4 22052 284.4-284.9 22053 284.9-286.4 22054 286.4-287.9 22055 287.9-289.4

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		Matrix is argillaceous.			in the cherty sections. «Py 25%, Gl 1%, Sph tr, Tt ?»	22056 289.4-290.8 22057 290.8-292.2
292.20 TO 310.30	«ARG+SERT»	Black to yellow grey. A well laminated, moderately deformed section of argillite with <10%, 1-3cm chert bands. This sequence is bleached by sericitization over approx. 50% of the int. Boundaries between altered and unaltered sections are sharp. Some transposition of cherty bands is noted This grades into brecciated sections, suggesting a tectonic feature. Argillites are mod sheared near top. Foliation 296.4m 305.3m	 50 55	Silty beds (pale grey) in sequence are weakly dol. Ser is present in sections up to 2m wide.	«Py tr-1%»	
		308.5-308.7 Qz-Dol Vein.		Vein 90% Qz, 10% Dol.	Py 5%, Gl tr, Tt tr.	
		Lower Contact	85			
310.30 TO 344.00	«SER SER + CHT (SERT)»	Yellow Grey. Texturally identical to the preceeding argillite and chert unit. This rock is typified by mod to strong ser of the argillite component. Shearing has caused some transposition and pseudo-brecciation of cherty sections.		Strongly ser with rare, irregular veins of Qz and Dol.	Py 1%.	
		{319.1-319.4} «FLT» {323.4-324.4} «FLT» {326.0-326.7} «FLT» {326.7-329.4} «QV» A smashed up Qz vein containing 10% Dol. Vein has inclusions of ser wall rock that contain abundant diss Py.		Wall rock inclusions surrounded by pale green sericite. e.g. @ 328.9m	«Py 1-3%»	
		----------Lower Contact-------	15			
		{330.1-331.2} «QZ_DOL VEIN»		Qz 70%, Dol 30%	Py tr	
		{341.5-343.8} «QZ_DOL VEIN» A white vein containing coarse grained patches of pale broewn and grey dol. Stylolitic partings contain green and dark brown mica.		Coarse mica on fractures.	«Py tr»	Geochem BCD 22058 341.5-342.5 22059 342.5-343.8
344.00 TO 360.30	«ALT CHT + ARG»	Brown to grey. A highly alt section of interbedded arg and cht. Strong alteration of several types is present in this int. Primary textures are not well preserved. Several Qz-Dol veins cut the int e.g. at 345.4-346.1, 351.1-351.5, 358.4-358.7, 358.9-360.0.		Intense chl alt over most of the int. Silicified patches in the chl alt may have been cherty sections. Ser is also present over narrow widths (10-70cm). Dol is present throughout.	«Py 1-3%» As fol parallel str in cherty sections near base of int.	
		Foliation @ 351.7m	60			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		{354.6-355.1} «PY CHT» Pyritic chert section. A well foliated to laminated grey chert or sericitic argillite. Chert makes up 60 % of unit. It is variably brecciated. Angular frags of SERT and grey chert are noted. Interval is crudely banded on a 3 cm scale. This is probably a tectonic feature.		Weak ser of argillite sections.	«Py 20%» as fol parallel str tp 20m. These may have been syngenetic.	
360.30 TO 400.90	«DOL ARG + CHT»	Cream Grey. A homogeneous unit composed of 40% cream to grey dolomite that replaces argillite. Dol rich sections are lensoid banded by the fol. This implies a pre S2 alt. Sheeted brown ser is present between dol lenses. No primary tectures seen. Foliation @ 384.2m	53	Intense Dol flooding. Weak ser along fol planes.	«Py 3%» as fol parallel str.	
		{364.3-265.6} «QZ_DOL VEIN» A white Qz vein containing 20% grey Dol as irregular patches. Central part of the vein (364.8-365.2) contains patches of altered wall rock. These are altered by brown ser Green mica and a soft pale green mineral (gypsum?) rim wall rock inclusions.		Strong white and brown ser envelope to 15cm from upper contact.	Py tr	
		{367.1-367.7} «QZ_DOL VEIN» As above.		Upper margin of the vein has a pale green ser selvage. Brown ser envelope to 30cm from contact.		
		371.2-371.5 Qz-Dol Vein. Qz 60%, Dol 40%. ----------Lower Contact----------	45			
		385.8-386.3 Qz-Dol Vein. Dol 25%, Qz 75% ----------Lower Contact----------	15			
		388.4-389.4 Qz-Dol Vein ----------Upper Contact----------	20	Vein has a strong Dol envelope at the lower contact.		
		389.8-390.1 Pyritized wall rock. Envelope to the above vein.			Py 20% as fine diss.	
		{392.5-396.1} «CHT» Grey. A highly siliceous or cherty int. This section contains 40 cm of massive dol near the upper contact. This appears to be a replacement of the wall rock. Chert is cut by black pyritic fol parallel sheets of argillaceous material.		Sections of massive Dol: 392.5-392.7 394.4-394.7 These contain traces of chl.	«Py 3%» as str up to 20mm across. These could be syngenetic.	
400.90 TO 456.70	«SER. ARG»	Yellow Grey. A typical section of sericitic tuff. This unit is well laminated and shows evidence of folding. Less altered sections are black to grey and have a distinctly argillaceous aspect. Chert bands up to 3cm wide comprise 30% of the rock. Primary layering best preserved between 428.7 and 430.2m. Strongly sericitic sections		A sudden loss of Dol at the top of this unit. This rock is strongly ser. Qz str are abundant. These seldom exceed 5cm in width. Many are deformed or diffuse. Chl is conspicuous close to the Qz str . e.g. @ 425.8m.	«Py 5%» as disseminations throughout unit.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		correlate with the less cherty intervals. Lamination in these is most likely tectonic.				
		Foliation @ 425.8m	45			
		@ 434.2m	55			
		428.7-433.4 A less altered section of strongly she ared chert and argillite.				
		435.5-436.9 As above.				
		451.1-453.3 Rubbly core. Fault?.				
456.70 TO 458.10	«Silicifica tion»	A zone of intense sil. The rock is grey and cherty with abundant Qz str. This zone contains pa tches of fine to medium grained, granoblastic pyrite. These zones are irregular in shape and reach 5cm in diameter.		Silica flooding. No envelopes, possibly a faulted upper contact.	«Py 5-10%»	
		----------Sharp Lower Contact-	80			
458.10 TO 460.80	«MUT» Muddy Tuff	A classic muddy tuff interval. The rock is fine gr ained and composed almost entirely of pyrite and sericite. Unit is well foliated and is cut by ptygmatically folded Qz str and Dol veinlets.				
		Foliation @ 489.6m	48			
		460.1-460.3 Sericitic Tuff.				
		460.4-460.6 Fault Gouge.				
		-----Sharp Contact @ 460.8m----	45			
460.80 TO 488.60	«SER. MV» Sericitized Mafic Lapilli Tuff	Yellow Green. Mafic lapilli tuff containing 30% lenticular mafic lapilli. Frags range from 5mm to4 5mm. Slightly stretched parallel to fol (aspect ratio 3:1). Matrix is a chl schist. Lapilli are variably sericitized. Most altered ones are a yell ow colour with spots of green mica. Alteration dec reases down int.		Intense ser in top 8m of the interval. This appears to be related to the sharp contact with the MUT, above. Fragments are obliterated close to the upper contact.	«Py tr» as coarse porphyroblasts with chl and Qz strain shadows.	Faulted contact with MUT. A 2cm Qz-Dol str marks the break.
		Foliation @ 461.2m	30			
		@ 466.4m	50			
		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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB		COMMENTS
BCD22029	81.70	83.20	1.50	0.006	0.14	0.17	2.3	0.02																
BCD22030	83.20	84.10	0.90	0.022	0.79	0.63	4.8	0.01																
BCD22031	111.60	112.50	0.90	0.002	0.02	0.02	2.0	0.04																
BCD22032	112.50	112.70	0.20	0.112	0.10	0.09	2.2	0.02																
BCD22035	141.30	142.30	1.00	0.006	0.02	0.01	0.4	0.05																
BCD22036	142.30	143.50	1.20	0.099	0.30	0.28	4.0	0.04																
BCD22037	143.50	144.80	1.30	0.005	0.03	0.05	1.8	0.01																
BCD22038	144.80	146.30	1.50	0.004	0.02	0.02	2.0	0.02																
BCD22039	146.30	147.80	1.50	0.004	0.01	0.01	1.7	0.16																
BCD22040	147.80	148.00	0.20	0.003	0.02	0.08	1.6	0.02																
BCD22043	167.30	167.60	0.30	0.002	0.04	0.10	2.2	0.01																
BCD22048	270.30	271.90	1.60	0.038	0.46	0.37	8.3	0.02																
BCD22049	271.90	272.50	0.60	0.302	0.28	0.36	48.0	0.21																
BCD22050	272.50	272.60	0.10	0.004	0.03	0.04	2.9	0.04																
BCD22051	283.60	284.40	0.80	0.003	0.04	0.06	0.5	0.01																
BCD22052	284.40	284.90	0.50	0.374	2.93	7.10	90.0	0.18																
BCD22053	284.90	286.40	1.50	0.080	0.25	0.68	12.2	0.07																
BCD22054	286.40	287.90	1.50	0.053	1.49	1.10	14.7	0.22																
BCD22055	287.90	289.40	1.50	0.350	1.38	1.31	34.0	0.11																
BCD22056	289.40	290.80	1.40	0.002	0.02	0.08	0.6	0.02																
BCD22057	290.80	292.20	1.40	0.006	0.01	0.04	1.0	0.07																

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22033	139.10	139.80	0.70												372	1120			75		2.0	1440						
BCD22034	139.80	141.30	1.50												113	400			35		1.3	480						
BCD22041	160.80	162.30	1.50												63	580			40		1.4	795						
BCD22042	162.30	163.60	1.30												46	370			40		1.2	278						
BCD22044	183.30	183.80	0.50												158	520			5		1.6	2380						
BCD22045	183.80	184.80	1.00												193	4000			5		1.7	2460						
BCD22046	184.80	185.40	0.60												1340	25500			15		4.6	6900						
BCD22047	227.10	227.40	0.30												262	2730			110		2.6	870						
BCD22058	341.50	342.50	1.00												7	67			5		0.4	50						
BCD22059	342.90	343.80	0.90																									
BCD22059	342.90	343.80	0.90												4	85			5		0.2	16						

257

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG257 | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION:

PLOTTING COORDS GRID:
NORTH: 1000.00N
EAST: 10100.00W
ELEV: 1345.00

ALTERNATE COORDS GRID:
NORTH: 10+ 0N
EAST: 101+ 0W
ELEV: 1345.00

COLLAR DIP: -67° 0' 0"
LENGTH OF THE HOLE: 380.00m
START DEPTH: 0.00m
FINAL DEPTH: 380.00m

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

DATE STARTED: May 1, 1989
DATE COMPLETED: May 9, 1989
DATE LOGGED: 0, 0

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

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

CONTRACTOR: Atlas Drilling Ltd.
CASING: Left in Hole
CORE STORAGE: Barriere

PURPOSE: To test the up-dip extension of the mineralizationencountered in RG256.

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
50.50	-	-67° 0'	ACID	ok		-	-	-	-	-	
73.00	-	-66° 0'	ACID	OK		-	-	-	-	-	
73.00	-	0° 0'	ACID	OK		-	-	-	-	-	
160.30	-	-65° 0'	ACID	OK		-	-	-	-	-	
190.80	-	-64° 0'	ACID	OK		-	-	-	-	-	
233.50	-	-62° 0'	ACID	OK		-	-	-	-	-	
306.60	209° 0'	-61° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 3.60	«CASING»					Oxidation on fractures to 16.3m
3.60 TO 16.30	«MT» Mafic Tuff	Dark Green. A fine grained, non-descript unit with no visible lapilli. It is typified by lenses, patches and stringers of white, fine grained calcite. The rock has a vigourous reaction to HCl. Martix consists of a fine grained chlorite schist or phyllite. Foliation @ 6.7m	72	Calcite makes up 15-30% of the rock. It occurs in lenticular masses and veinlets that have been boudined by the fol Hematite stained Qz veinlet @ 8.4m	Py tr.	Recovery 53% over this interval. Core highly fractured.
16.30 TO 61.10	«MPYR» Mafic Lapilli Tuff	Dark Green. Similar to the previous int. This unit is much less calcitic and contains 5-20% mafic lapilli. These are rounded in shape and slightly flattened along the foliation direction. Lapilli average 35mm in size. Foliation @ 45.7m	72	Weak pervasive calcite alteration particularly of the lapilli (50%). In the matrix, cal is restricted to irregular patches and rare str.	Py tr.	Recovery 78%.
		32.4-32.5 Qz-Dol vein containing 80% white Dol and 20% Qz. --------Sharp Upper Contact----	45	Slight bleaching and pyritization of the lapilli at 35.2m		
		60.1-61.1 Qz-Dol Vein containing 50% Qz and 50% Dol.		Pyritization and mod ser to a distance of 15cm from lower contact.	Py tr.	
61.10 TO 83.60	«MPYR» Mafic Fragmental	Green-Brown. A faulted and altered mafic lapilli tuff with 20% interbeds (up to 20cm) of a fine grained crystal ash tuff. The ashy beds are characterized by chlorite streaks up to 3mm in length in a pale green-grey matrix. The fragmental section of the interval is moderately chloritized close to cross-cutting faults and Qz str. Foliation @ 79.5m	80	Weak pervasive chl. Locally weakly to moderately sericitized adjacent to Qz str.	«Py 5%» as disseminations along fol planes.	
		73.5-73.7 Qz-Cal stringers up to 5cm in width make up 90% of this int. ---------Lower Contact------	50			75.5-78.0 Recovery 54%
		{83.3-83.6} «FLT BRX»				
83.60 TO 101.70	«ASH TUFF» Mafic Ash Tuff.	Pale green. A fine grained homogeneous unit composed mainly of chl and ser. It is typified by 10-20% chl streaks. These may have once been crystal fragments. Rare lapilli sized clasts of a darker green material are noted. These make up less than 1% of the rock.		Weak to None. Possibly slightly bleached.		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		Chlorite streaks have rectangular and diamond shapes, suggesting that they are perhaps chloritiz ed amphibole crystals.				
		85.8-86.0 Qz-Dol Vein. The vein is composed of 40% grey Dol, 20% white Dol and 40% Qz. --------Upper Contact------	55	Angular chl fragments are probably altered wall rock inclusions. These are noted at the upper contact and in the centre of the vein.	Py 1% associated with chloritized wall rock frags.	
		{83.8-84.2} «FLT BRX»				
		90.6-91.5		A brownish alteration of a more lapilli 30% of the int. Brown colour may caused by biotite.	Py tr-1%	
101.70 TO 147.00	«SER MV» Sericitized Mafic Lapilli Tuff.	Yellow Brown. A coarse grained mafic fragmental composed of 30% 20-55mm mafic lapilli. Matrix supp orted frags in a chl rich tuffaceous matrix. Foliation @ 137.7m	80	Mod to strong Ser. Alt intensity increases down int. At top the frags are weakly bleached to a pale grey colour. Downwards the lapilli are prog- ressively more sericitized. The matrix becomes bleached and dolomitic near to base of the unit.	«Py 1%, Sph tr, Gl tr» Mineralization is present in rare Qz-Dol str (to 5cm) that contain traces of Sph and Gl. Diss eminated Py is also present in the core s of altered lapilli.	
		{139.6-140.9} «FLT» {140.9-147.0} «DOL MV» Replacement of the matr by patches of dolomite. Almost complete replace- ment close to the base of the int.				
		{134.4-135.5} «SIL MV» Pervasively silicified sericitic mafic. Primary textures obliterated. Rock contains an abundant orange-brown mineral - possibly leucoxene. Numerous irregular Qz and Dol str cut the int. The bottom 50 cm of the int is ground up.		Strong Sil overprints ser.	«Py 5%, Gl tr, Sph tr» Py is concentra ted in the silicified zone. Traces of Gl and Sph are noted over 1-3cm interv als.	Ground Core 135.0-135.5
147.00 TO 157.00	«DOL MV» Dolomitized Mafic Tuff	Grey. A sudden change in alteration at 147.0m. Below this level ser is almost absent. The rock is replaced by sugary, grey dolomite (20-70%). Dol intensity increases down int. Brown sheeted leucoxene and ghost remnants after lapilli indicate the mafic parent.		Strong Dol alt. Dol 20-70%, increases down hole.	«Py 1-3%»	
		{156.6-157.0} «FLT» Rubbly Core.				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
157.00 TO 165.20	«ARG+CHT BRX»	Medium Grey. A Strongly sil, variably brecciated unit composed of interbedded grey chert and black argillite. The rock is brecciated in the argillite dominated sections. Here, angular frags of grey chert, QV and massive dol, sit in a black argillaceous matrix. Frags are matrix supported and make up 20% of the int. Clasts range in size from 1mm to 35mm. Cherty sections are fractured and healed by late silica.		Weak to mod sil of arg and chert. Dol noted as clots in the breccia. These resemble vein material. 1-3cm Dol veins cut the int @ 157.6 and 160.4m. Mineralized Qz str are present below 160.0m	«Py 5%, Sph tr-1%, Gl tr, Tt tr» Sulphides are abundant below 160.0m. Here fine Py str cut sil arg and grey chert. Most are associated with irregular Qz str	

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22124	275.60	277.10	1.50												1180	1450	1340		45		37.3							
BCD22125	277.10	277.90	0.80												53	92	56		50		1.4							
BCD22126	277.90	279.40	1.50												1420	36	14		5		1.0							
BCD22127	279.40	280.40	1.00												2080	47	18		20		1.3							
BCD22128	280.40	291.40	1.00												12200	261	23		60		5.4							

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
157.00 TO 165.20	«ARG+CHT BRX»	Medium Grey. A Strongly sil, variably brecciated unit composed of interbedded grey chert and black argillite. The rock is brecciated in the argillite dominated sections. Here, angular frags of grey chert, QV and massive dol, sit in a black argillaceous matriz. Frags are matrix supported and make up 20% of the int. Clasts range in size from 1mm to 35mm. Cherty sections are fractured and healed by late silica.		Weak to mod sil of arg and chert. Dol noted as clots in the breccia. These resemble vein material. 1-3cm Dol veins cut the int @ 157.6 and 160.4m. Mineralized Qz str are present below 160.0m	«Py 5%, Sph tr-1%, Gl tr, Ft tr» Sulphides are abundant below 160.0m. Here fine Py str cut sil arg and grey chert. Most are associated with irregular Qz str	

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22083	160.00	161.10	1.10	0.008	0.20	0.08	1.5	0.02															
BCD22084	161.10	162.60	1.50	0.008	0.10	0.10	2.4	0.07															
BCD22085	162.60	164.10	1.50	0.005	0.06	0.06	0.5	0.02															
BCD22086	164.10	165.20	1.10	0.006	0.12	0.12	0.7	0.05															
BCD22087	165.20	166.40	1.20	0.011	0.16	0.16	3.2	0.02															
BCD22088	166.40	167.80	1.40	0.022	0.10	0.06	2.1	0.01															
BCD22089	167.80	168.90	1.10	0.002	0.03	0.02	0.4	0.08															
BCD22090	168.90	169.90	1.00	0.062	0.28	0.22	12.3	0.18															
BCD22091	169.90	170.40	0.50	0.075	1.21	0.01	26.6	0.22															
BCD22092	170.40	171.80	1.40	0.007	0.23	0.16	4.2	0.25															
BCD22093	171.80	172.45	0.65	0.006	0.04	0.03	2.0	0.06															
BCD22094	172.45	173.90	1.45	0.006	0.01	0.02	0.3	0.11															
BCD22095	173.90	174.30	0.40	0.004	0.01	0.01	0.4	0.15															
BCD22096	242.00	243.50	1.50	0.003	0.01	0.01	0.2	0.05															
BCD22097	243.50	245.00	1.50	0.003	0.01	0.02	0.2	0.04															
BCD22098	245.00	245.70	0.70	0.020	0.10	0.16	4.2	0.04															
BCD22099	245.70	246.20	0.50	0.005	0.02	0.04	2.6	0.41															
BCD22100	246.20	247.70	1.50	0.005	0.01	0.02	2.0	0.02															
BCD22101	247.70	249.20	1.50	0.101	0.08	0.04	2.3	0.07															
BCD22102	249.20	250.50	1.30	0.001	0.01	0.01	0.5	0.01															
BCD22103	250.50	251.00	0.50	0.280	1.26	0.80	69.2	0.04															
BCD22104	251.00	251.40	0.40	0.004	0.04	0.03	1.7	0.05															
BCD22105	251.40	251.80	0.40	0.110	1.78	0.16	46.2	0.02															
BCD22106	251.80	253.30	1.50	0.001	0.02	0.01	1.0	0.01															
BCD22107	253.30	253.90	0.60	0.002	0.02	0.02	0.4	0.06															
BCD22108	253.90	255.40	1.50	0.001	0.01	0.01	0.2	0.02															
BCD22109	255.40	256.90	1.50	0.001	0.01	0.01	0.2	0.02															
BCD22110	256.90	257.70	0.80	0.002	0.01	0.01	0.3	0.01															
BCD22111	257.70	258.20	0.50	0.003	0.04	0.01	0.2	0.02															
BCD22112	258.20	260.70	2.50	0.031	0.04	0.01	0.2	0.03															
BCD22113	260.70	261.10	0.40	0.080	2.03	1.28	22.0	0.09															
BCD22114	262.80	264.30	1.50	0.048	0.02	0.06	10.0	0.04															
BCD22115	264.30	265.80	1.50	0.381	0.86	0.57	134.0	0.19															
BCD22116	265.80	267.00	1.20	0.002	0.04	0.04	2.1	0.02															
BCD22117	267.00	268.90	1.90	0.040	0.16	0.08	16.4	0.02															
BCD22118	268.90	270.40	1.50	0.004	0.01	0.01	2.2	0.04															
BCD22119	270.40	271.90	1.50	0.002	0.01	0.01	1.7	0.01															
BCD22120	271.90	273.40	1.50	0.001	0.01	0.01	0.7	0.02															
BCD22121	273.40	274.30	0.90	0.021	0.04	0.04	7.6	0.05															
BCD22122	274.30	275.00	0.70	0.524	0.75	0.36	156.6	0.20															

Sample	From (m)	To (m)	Length (m)	CU %	ZN %	PB %	AG G/T	AU G/T	SB %	AS %	CU PPM	ZN PPM	PB PPM	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB		
BCD22123	275.00	275.60	0.60	0.224	0.68	0.28	64.2	0.17																
BCD22129	281.40	282.30	0.90	0.348	0.69	0.72	42.4	0.04																
BCD22130	282.30	282.70	0.40	1.940	2.72	3.48	328.0	0.62																
BCD22131	282.70	284.00	1.30	0.017	0.01	0.06	3.8	0.02																
BCD22132	325.60	327.10	1.50	0.058	0.48	0.19	18.9	0.25																
BCD22133	327.10	328.60	1.50	0.071	1.03	0.61	26.1	0.42																
BCD22134	328.60	329.30	0.70	0.174	1.18	1.94	51.8	0.77																
BCD22135	329.30	330.10	0.80	0.029	0.19	0.39	11.7	0.76																
BCD22136	330.10	330.80	0.70	0.011	0.39	0.49	12.6	0.82																
BCD22137	330.80	332.30	1.50	0.012	0.76	0.54	13.1	0.76																
BCD22138	332.30	333.80	1.50	0.008	0.22	0.23	6.2	0.55																
BCD22139	333.80	334.90	1.10	0.005	0.01	0.02	1.9	0.09																
BCD22140	334.90	336.40	1.50	0.006	0.02	0.01	1.8	0.03																
BCD22141	345.70	347.20	1.50	0.004	0.01	0.01	1.9	0.02																
BCD22142	347.20	348.10	0.90	0.004	0.01	0.02	2.0	0.01																
BCD22143	348.10	349.60	1.50	0.007	0.01	0.01	1.8	0.02																
BCD22144	349.60	351.00	1.40	0.006	0.02	0.02	1.7	0.02																
BCD22145	351.00	352.50	1.50	0.003	0.01	0.01	1.6	0.02																
BCD22146	352.50	354.00	1.50	0.027	0.03	0.05	1.9	0.03																
BCD22147	354.00	355.10	1.10	0.002	0.01	0.01	1.8	0.02																
BCD22148	355.10	356.60	1.50	0.002	0.01	0.02	1.9	0.02																
BCD22149	356.60	357.50	0.90	0.006	0.02	0.01	2.0	0.01																
BCD22150	357.50	359.00	1.50	0.027	0.02	0.02	1.8	0.02																
BCD22151	359.00	360.50	1.50	0.016	0.08	0.01	1.9	0.02																
BCD22152	360.50	361.30	0.80	0.169	2.19	1.61	11.8	0.20																
BCD22153	361.30	361.50	0.20	0.109	0.67	0.42	4.3	0.01																
BCD22154	361.50	362.10	0.60	0.327	2.58	1.23	11.9	0.16																
BCD22155	362.10	363.60	1.50	0.017	0.08	0.04	2.1	0.01																
BCD22156	363.60	365.10	1.50	0.046	0.28	0.15	2.6	0.01																
BCD22157	365.10	366.60	1.50	0.127	0.34	0.39	5.8	0.02																
BCD22158	366.60	367.20	0.60	0.174	0.51	0.43	6.2	0.02																
BCD22159	367.20	368.70	1.50	0.014	0.03	0.02	1.8	0.02																
BCD22160	368.70	369.20	0.50	0.011	0.03	0.04	1.9	0.01																
BCD22161	369.20	369.80	0.60	0.139	0.61	0.71	7.8	0.04																
BCD22162	369.80	371.30	1.50	0.104	0.09	0.09	3.9	0.02																
BCD22163	371.30	372.80	1.50	0.129	0.36	0.72	8.1	0.03																
BCD22164	372.80	373.70	0.90	0.008	0.01	0.01	1.8	0.11																
BCD22165	373.70	375.20	1.50	0.095	0.04	0.14	2.4	0.02																
BCD22166	375.20	376.70	1.50	0.182	0.46	0.63	5.7	0.02																
BCD22167	376.70	377.00	0.30	0.066	0.23	0.24	3.9	0.01																

Sample	From (m)	To (m)	Length (m)	CU %	ZN %	PB %	AG G/T	AU G/T	SB %	AS %	CU PPM	ZN PPM	PB PPM	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB		
BCD22168	377.00	378.50	1.50	0.025	0.16	0.19	3.8	0.02																
BCD22169	378.50	378.90	0.40	0.010	0.08	0.04	1.8	0.19																
BCD22170	378.90	379.50	0.60	0.003	0.03	0.04	1.7	0.02																
BCD22171	379.50	381.00	1.50	0.004	0.01	0.03	1.8	0.02																

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION:

PLOTTING COORDS GRID: SURVEY
NORTH: 966.57N
EAST: 10616.19W
ELEV: 950.98

ALTERNATE COORDS GRID: SAM
NORTH: 10+50N
EAST: 106+20W
ELEV: 1153.00

COLLAR DIP: -65° 0' 0"
LENGTH OF THE HOLE: 118.88m
START DEPTH: 217.02m
FINAL DEPTH: 335.90m

COLLAR GRID AZIMUTH: 180° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: June 9, 1989
DATE COMPLETED: June 13, 1989
DATE LOGGED: June 18, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: JOHNSON CAMP

PURPOSE: DEEPENED RG202

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
92.40	-	-67° 0'	ACID	OK		-	-	-	-	-	
133.20	-	-68° 0'	ACID			-	-	-	-	-	
182.90	-	-67° 0'	ACID	OK		-	-	-	-	-	
213.40	-	-65° 0'	ACID	OK		-	-	-	-	-	
219.50	-	-68° 0'	ACID	OK		-	-	-	-	-	
305.90	-	-68° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
216.90 TO 217.02	«Rubble»					
217.02 TO 293.70	«Alt. Arg & Wacke	Mixed Argillite, Wacke and lesser chert laminae. Variable levels of alteration and brecciation exist in this interval. Many primary fabrics obliterated in the lower parts of the section. Rust brown "Sericite" dominates more competant sections. {232.2 - 233.7} «Sed Bx» {255.8 - 290.2} «Sil Bx» Silicified Breccia with Sed. Clasts.	35	Dominantly sericitic alteration at the top of the hole. Alteration contacts parallel foliation planes. {217.4 - 218.2} «Ser» {221.4 - 222.3} «Ser» {229.6 - 232.2} «Ser»	3-4% F.G. Diss. Py 233.0 - 233.1 - 1-2% CPY, SPH assoc. with QDV {235.7 - 236.1} «GN, TT=19%» Assoc w QV {262.3 - 265.8} «CPY GN, SPH 1-3%» 5-6% PY Dissem. {267.5 - 272.9} «1-2% GN, CPY, SPH» in Sil Bx. {276.7 - 276.8} «2% SPH» in Sil Bx. {284.5 - 287.2} «Diss CPY, GN, SPH» in Sil Bx.	{245.2 - 246.9} «Plt GDG» {248.2 - 248.5} «PLT GDG» {251.2 - 251.6} «PLT GDG» Generally highly altered sediments with few first order textures. Sulphides are widely scattered in a silicified breccia zone.
293.70 TO 335.90	«MPYRO»	{293.7 - 316} «Alt. MPYRO» Generally highly silicified and dolomitized mafic lappilli tuffs. Relict clasts are apparent but may also be an alternation overprint. Lappilli more obvious at base. 1-2% Qtz veins and stringers. {316.0 - 355.0} «MPYRO» Typical Chloritic matrix with sericitized lapilli.	75	Strong silicification and dolomitizatio n. Rust colour sericite, Pervasive (5%) Silica Flooding? Weak Dolomitization	3-4% Diss. PY 1-2% F.G. Diss. PY	Possibly, in part, a mafic tuff.

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
22454	235.50	236.20	0.70	.001	.02	.01	2.2	.03															
22456	261.00	261.70	0.70	.002	.19	.08	2.4	.03															
22457	261.70	263.20	1.50	.589	2.13	.63	72.4	1.03															
22458	263.20	264.70	1.50	.066	.41	.97	13.5	.22															
22459	264.70	266.30	1.60	.008	.02	.01	2.8	.01															
22460	267.50	268.20	0.70	.248	1.43	.71	69.8	.17															
22461	269.80	270.60	0.80	.112	.49	.40	19.7	.02															
22462	271.90	272.40	0.50	.048	.17	.22	9.9	.14															
22463	276.50	277.20	0.70	.060	.54	.51	11.2	.33															
22464	284.40	285.00	0.60	.019	2.02	2.52	344.0	10.03															
22465	285.00	285.60	0.60	.001	.30	.17	10.2	.03															
22466	285.60	286.20	0.60	.009	.11	.1	6	11.8	.25														
22467	286.60	287.30	0.70	.002	.01	.06	2.0	.06															

Sample	From (m)	To (m)	Length (m)	SIO2 %	AL2O3 %	CAO %	MGO %	NA2O %	K2O %	FE2O3 %	MNO2 %	TIO2 %	BA %	ZR %	CU PPM	ZN PPM	PB %	TOTAL %	AU PPB	BA PPM	AG PPM	PB PPM	P2O5 %	SR %	S %	TOTAL %	AS PPM	SB PPM
22453	230.00	232.50	2.50	67.01	12.91	.34	2.81	.51	2.85	5.40	.12	.50	.090		8	67				81	.4	49	.01		1.47		40	1
22455	251.70	254.70	3.00	38.77	12.86	10.45	6.97	.79	1.56	8.86	.32	2.02	.050		42	127				65	1.6	118	.25		2.50		75	7
22468	301.50	304.50	3.00	44.44	14.09	7.88	6.77	.07	2.61	8.59	.29	1.40	.100		34	193				122	1.2	131	.20		1.09		27	2
22469	323.20	326.20	3.00	34.41	11.07	11.73	10.52	.90	.83	9.12	.21	1.27	.025		60	94				35	1.4	65	.15		.09		1	2

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 107+20 SECTION

PLOTTING COORDS GRID: SAM
NORTH: 1038.00N
EAST: 10720.00W
ELEV: 1106.98

ALTERNATE COORDS GRID: SAM
NORTH: 10+38N
EAST: 107+20W
ELEV: 1106.98

COLLAR DIP: -45° 0' 0"
LENGTH OF THE HOLE: 215.20m
START DEPTH: 101.80m
FINAL DEPTH: 317.00m

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

DATE STARTED: June 13, 1989
DATE COMPLETED: June 17, 1989
DATE LOGGED: June 21, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: JOHNSON CAMP

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
~~0.00~~	-	~~-45° 0'~~	~~ACID~~	~~OK~~		-	-	-	-	-	
110.30	-	-46° 0'	ACID	OK		-	-	-	-	-	
144.17	-	-47° 0'	ACID	OK		-	-	-	-	-	
181.66	-	-44° 0'	ACID	OK		-	-	-	-	-	
248.40	-	-45° 0'	ACID	OK		-	-	-	-	-	
279.20	-	-45° 0'	ACID	OK		-	-	-	-	-	
314.20	-	-45° 0'	ACID	OK		-	-	-	-	-	
115.50	224° 0'	-45° 0'	TRO-PARI	OK		-	-	-	-	-	
330.00	223° 0'	-46° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

goal to be re-entered
not printed correctly

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 1.00						
101.80 TO 158.10	ARGILLITE & WACKE «ARG+WCKE»	Black and grey. Fine to med. grained. Finely laminated and interbedded sequences of argillite and fine to med. grains qtz. wackes. Highly con- torted and folded beds with strong rotations in foliation wackes rich in qtz. clasts (2-3mm sub- rounded to anhedral). Grading poorly defined with an absence of crossbeds.		Absence of pervasive hydrothermal alteration.	2-3% cg. py. bands and dissem. biogenic origin.	Fold axis proposed at 132.0m (bedding perpendicular to foliation).
101.80 TO 158.10	ARGILLITE & WACKE «ARG+WCKE»	Black and grey. Fine to med. grained. Finely laminated and interbedded sequences of argillite and fine to med. grains qtz. wackes. Highly con- torted and folded beds with strong rotations in foliation wackes rich in qtz. clasts (2-3mm sub- rounded to anhedral). Grading poorly defined with an absence of crossbeds.		Absence of pervasive hydrothermal alteration.	2-3% cg. py. bands and dissem. biogenic origin.	Fold axis proposed at 132.0m (bedding perpendicular to foliation).
		AT 103.5m FOLIATION	45			
		AT 103.5m FOLIATION	45			
		{143.3-144.4} «qv»				
		{143.3-144.4} «qv»				
158.10 TO 317.00	«MPYRO»	Green. Fine grained. Avariably altered sequence of mafic lappilli tuffs and tuffs. Strong qtz.- carbonate alteration.		Moderate to strong sericite, qtz.-carb. minor fuchsite intervals.	1-2% background py.	{158.1-158.4} «flt. gdg.»
158.10 TO 317.00	«MPYRO»	Green. Fine grained. Avariably altered sequence of mafic lappilli tuffs and tuffs. Strong qtz.- carbonate alteration.		Moderate to strong sericite, qtz.-carb. minor fuchsite intervals.	1-2% background py.	{158.1-158.4} «flt. gdg.»
		{158.1-163.2} «alt mpyro»		Strong sil. flooding with qtz.-carb	5-7% py.	
		{158.1-163.2} «alt mpyro»		Strong sil. flooding with qtz.-carb	5-7% py.	
		FOLIATION	90	veins 2-5% fuchsite.		
		FOLIATION	90	veins 2-5% fuchsite.		
		{163.2-166.2} «flt. d. mpyro» Sheared no gouge.		Strong qtz.-carb. stringers fuchsitic.	75% py. bands tr. gn.	
		{163.2-166.2} «flt. d. mpyro» Sheared no gouge.		Strong qtz.-carb. stringers fuchsitic.	75% py. bands tr. gn.	
		FOLIATION	90			
		FOLIATION	90			
		{166.2-186.1} «mpyro» Typical sericitic lapilli in green, chloritic matrix.				
		{166.2-186.1} «mpyro» Typical sericitic lapilli in green, chloritic matrix.				
		FOLIATION	85			
		FOLIATION	85			
		{186.1-191.6} «qtz. dol. alt.» minor siliceous intervals.		Pervasive qtz.-dol. alt.		Almost clastic appearance.
		{186.1-191.6} «qtz. dol. alt.» minor siliceous intervals.		Pervasive qtz.-dol. alt.		Almost clastic appearance.
		{205.6-210.9} «sil. flood?» cherty section.		Dark grey sil. flooding.	7-10% py. bands and dissem. {208.5-	Chert horizon is possible.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		{205.6-210.9} «sil. flood?» cherty section.		Dark grey sil. flooding.	7-10% py. bands and dissem. {208.5-209.1} «tr. gn., sph.» 209.1} «tr. gn., sph.» {210.8-210.9} «mspy» {210.8-210.9} «mspy»	Chert horizon is possible.
		{210.9-216.4} «mt.» finely laminated mafic tuffs. {210.9-216.4} «mt.» finely laminated mafic tuffs.				
		{216.4-218.2} «xtal. tuff» mafic interned feldspar {216.4-218.2} «xtal. tuff» mafic interned feldspar				Possibly porphyroblastic phenos. Possibly porphyroblastic phenos.
		crystal tuff. crystal tuff.				
		{218.2-317.0} «alt. mpyro.» {218.2-317.0} «alt. mpyro.»		218.2-251.1 moderate qtz.-dolomite alt. 218.2-251.1 moderate qtz.-dolomite alt.	{218.2-218.5} «tr. gn.» with qv. {218.2-218.5} «tr. gn.» with qv.	273.5-274.6 qv. 273.5-274.6 qv.
				minor fuchsite. minor fuchsite.		
		END OF 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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22472	162.70	164.00	1.30	.001	.02	.02	2.0	.01															
BCD22474	207.00	208.50	1.50	.001	.01	.01	2.1	.02															
BCD22475	208.50	209.20	0.70	.002	.48	.52	10.0	.23															
BCD22476	210.50	210.90	0.40	.002	.54	.32	6.2	.21															
BCD22478	241.40	241.70	0.30	.001	.10	.09	1.5	.01															
BCD22481	285.30	286.80	1.50	.056	.25	.10	4.2	.16															
BCD22482	286.80	288.30	1.50	.004	.07	.04	1.6	.24															
BCD22483	290.80	291.60	0.80	.008	.51	.19	2.4	.03															
BCD22484	291.80	292.70	0.90	.072	.53	.36	6.4	.09															
BCD22485	292.70	294.20	1.50	.001	.05	.03	2.2	.15															
BCD22486	294.20	295.70	1.50	.001	.02	.02	2.1	.04															
BCD22487	295.70	297.20	1.50	.001	.04	.01	1.6	.02															
BCD22488	297.20	298.10	0.90	.001	.04	.06	1.0	.01															
BCD22489	316.50	317.00	0.50	.001	.06	.14	2.3	.02															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22470	138.60	141.60	3.00	56.10	17.53	1.95	3.07	.27	3.60	7.96	.08	.86	.23		49	156	56		5	162	.6	56	.23		.12		62	1
BCD22471	160.00	162.70	2.70	46.25	12.35	8.13	6.13	.14	2.69	8.48	.35	.99	.105		23	123	111		10	68	1.1	111	.20		1.43		90	1
BCD22473	179.20	181.80	2.60	36.57	11.73	9.08	11.20	.36	1.22	10.03	.26	1.4	.03		45	95	72		5	33	1.0	72	.3		.47		1	1
BCD22477	212.20	215.20	3.00	42.94	14.75	5.9	8.15	1.95	1.26	10.38	.27	1.94	.035		489	159	83		5	29	.8	83	.38		1.55		16	1
BCD22479	245.40	248.40	3.00	32.48	9.50	14.80	8.79	.19	2.56	9.92	.40	.83	.05		411	141	256		20	38	1.4	256	.15		4.10		220	3
BCD22480	281.40	284.40	3.00	41.84	9.67	10.72	7.82	.16	1.82	9.05	.30	1.00	.125		68	207	290		10	96	1.4	290	.26		1.76		311	1

MINNOVA INC.

HOLE NUMBER: RG208B — DRILL HOLE RECORD — IMPERIAL UNITS: — METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: SECTION 107+20

PLOTTING COORDS GRID: SAM
NORTH: 1033.00N
EAST: 10720.00W
ELEV: 1107.16

ALTERNATE COORDS GRID:
NORTH: 10+33N
EAST: 107+20W
ELEV: 1107.16

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 162.50m
START DEPTH: 132.80m
FINAL DEPTH: 295.30m

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

DATE STARTED: June 17, 1989
DATE COMPLETED: June 19, 1989
DATE LOGGED: June 25, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP:

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
135.90	-	-89° 0'	ACID	OK		-	-	-	-	-	
191.40	-	-89° 0'	ACID	OK		-	-	-	-	-	
238.00	-	-86° 0'	ACID	OK		-	-	-	-	-	
295.35	-	-86° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
132.80 TO 139.00	«MT» MAFIC TUFFS	Green. Fine grained to med. grained. Foliated but fairly competant unit of mafic tuffs with lesser interbeds of graphitic argillite. FOLIATION	45	Chloritic alteration is pervasive and defines foliation minor (<1%) fuchsite.	3-10% fine grained dissem. pyrite.	Possibly an altered sed., although amount of chlorite is unusual.
139.00 TO 234.10	«ARG+WCKE»	Black to grey. Fine grained. Interbedded and finely laminated sequences of chert and argillite, strongly deformed with phase 1 structures. Soft sed. deformation apparent. Tectonic brecciation increase towards base of sequence qtz. veins prominent at top of unit. {142.0-143} «sed bx» {144.5-147.9} «40% qv» broken core. {147.9-166.5} «arg+wcke» well laminated. At 143.0m. FOLIATION	35	Generally unaltered at top. Silicification and sericitization occurs at the lower end within more brecciated sequences. {166.9-172.5} «sil flood»	1-2% fine grained diss. py. {167.0-167.4} «2-3% gn, 2-3% sph» {167.9-168.3} «5% sph 2% gn» in qv {168.9-169.5} «1-2% sph, 1-2% gn» in qv	{139.0-142.0} «flt gdge» 20% qv. in mut Fold axis at 163.0m.
		{172.5-174.0} «sed bx» {174.0-174.7} «cht» Black graphitic parting. Minor brecciation. {174.7-234.1} «sed bx» Qv+cht+arg fragments sheared and boudined. Variable brecciation strong silicification. Transitional contact into mafic volcanics.		Variable sections of silicification and rusty sericitization 10-15% qv.	202.7-202.8-1-2% sph, gn in qv. {210.2-212.2} «2% sph, 1% gn, 2% cpy, tr tt» in siliceous breccia zone.	Shear zone. {200.8-201.1} «flt gdg» {206.9-207.8} «flt gdg»
234.10 TO 295.30	«MPYRO»	Green. Fine grained mtx. Lapilli. Generally a typical sequence of lapilli tuffs. Intervals of qtz. carb stringers. Crosscutting and paralell to foliation. Minor (8cm) beds of ash tuffs. {248.4-266.2} «10-15% qv-qds» FOLIATION END OF HOLE.	45	Bleaching and silica flooding are common.	1-5% background fine grained diss. py. Bands of fine grained py. minor to trace gn. sl.	

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZK %	PB %	AG G/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZK PPM	PB PPM	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD20618	165.90	167.00	1.10	.024	.02	.02	2.0	.07															
BCD22491	167.00	167.40	0.40	1.65	1.95	2.21	340	.22															
BCD20619	167.40	168.00	0.60	.002	.01	.01	.04	.09															
BCD22492	168.00	168.40	0.40	.605	1.62	2.18	347	.18															
BCD20620	168.40	169.00	0.60	.101	2.95	2.72	90.0	.08															
BCD20621	169.00	169.80	0.80	.003	.02	.02	.05	.03															
BCD22493	169.00	169.60	0.60	.292	1.32	1.47	143	.19															
BCD20622	169.80	171.30	1.50	.006	.01	.01	2.0	.16															
BCD20623	171.30	173.10	1.80	.022	.10	.24	18.5	.38															
BCD22494	210.50	211.50	1.00	.139	1.21	.74	31.7	.21															
BCD22495	211.50	212.60	1.10	.014	1.48	.14	3.9	.04															
BCD22498	267.60	268.30	0.70	.014	1.48	.14	3.9	.04															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22490	135.80	138.70	2.90	42.8	10.48	9.82	8.03	.22	1.75	8.11	.05	.52	08		122	139	162	85.48	10	143	1.9	162	.85				110	6
BCD22496	236.10	239.00	2.90	36.44	11.61	12.72	5.70	1.21	2.65	8.36	.21	1.18	.075		79	146	119	85.34	5	63	1.4	119	.88				114	1
BCD22497	254.80	257.80	3.00	43.68	13.72	5.39	9.25	2.44	.94	10.87	.23	1.42	.8		66	90	91	96.00	5	33	1.1	91	.80				4	1
BCD22499	282.10	285.10	3.00	40.66	13.69	5.93	10.84	2.51	.32	11.69	.3	1.8	.015		55	353	424	91.92	5	28	1.3	4245	.92				1	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG258 | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION:

PLOTTING COORDS GRID: sam
NORTH: 350.00N
EAST: 9700.00W
ELEV: 1365.00

ALTERNATE COORDS GRID:
NORTH: 3+50N
EAST: 97+ 0W
ELEV: 1365.00

COLLAR DIP: -80° 0' 0"
LENGTH OF THE HOLE: 556.30m
START DEPTH: 0.00m
FINAL DEPTH: 556.30m

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

DATE STARTED: May 9, 1989
DATE COMPLETED: May 24, 1989
DATE LOGGED: 0, 0

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

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

CONTRACTOR: ATLAS DRILLING LTD.
CASING: LEFT IN HOLE
CORE STORAGE: BARRIERRE

PURPOSE: TO TEST THE POSSIBILITY OF A SYNCLINAL FOLD IN THEREA ZONE. or to intersect major structure between the two deposits

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
60.90	-	-80° 0'	ACID	OK		-	-	-	-	-	
99.40	-	-80° 0'	ACID	OK		-	-	-	-	-	
236.50	-	-75° 0'	ACID	OK		-	-	-	-	-	
288.00	-	-71° 0'	ACID	OK		-	-	-	-	-	
361.00	-	-68° 0'	ACID	OK		-	-	-	-	-	
446.30	-	-62° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 91.90						
0.00 0.00 0.00 TO 6.70	«CASING»					
0.00 TO 91.90						
TO 6.70						
TO 91.90						
6.70						
6.70 TO 10.10	«RUBBLE»	PROBABLY TILL. SOME INTRUSIVE FRAGMENTS.				
10.10 TO 14.00	«SERT»	COLOUR:PALE GREEN-YELLOW GRAIN SIZE:F A WELL LAMINATED SECTION OF PALE GREEN PHYLLITE. THE ROCK IS VERY FINE GRAINED AND WELL FOLIATED. FRACTURED TO POKER CHIPS. THE UNIT IS TYPIFIED BY FINE FOLIATION, PARALLEL PY STR (<1mm), AND DISEMINATED CRYSTALS ALONG LAMINATIONS. HIGHLY FRACTURED. (>100/m). FOLIATION @ 10.8m	80	STRONG SER. PERVASIVE ALTERATION OF AN ARGILLITE?	STRINGERS PARALLEL TO FOLIATION AND STRINGS OF ROUNDED DISSEMINATED GRAINS ALONG WHAT APPEARS TO BE ORIGINAL LAMINATION. «PY 5%».	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
14.00 TO 32.30	«SER ARG»	COLOUR:YELLOW-GREY GRAIN SIZE:F A HIGHLY VARIABLE INTERVAL DOMINATED BY SERICITIZED ARGILLITES. THESE ARE FINE GRAINED AND DISPLAY RELIEF LAMINATION IN PLACES. ALTERATION VARIES FROM PERVASIVE SERICITE TO INTENSE SILICIFICATION OVER NARROW INTS. IN THESE ZONES, IRREGULAR QZ-DOL VEINS ARE PRESENT. THESE HAVE GRADATIONAL CONTACTS. WALLROCKS ADJACENT TO THESE ARE ALSO STRONGLY SIL. FOLIATION @ 20.2m	70	VARIABLE SILICIFICATION AND STRONG SER. SER ALT WEAKENS DOWN INT. QZ VEINS UP TO 15mm IN WIDTH WITH IRREGULAR CONTACTS ARE ABUNDANT BELOW 26.2m.	«PY 1%» AS FINE STRINGERS PARALLEL TO FOL IN SER INTS AND AS COARSER CRYSTALS IN QZ-DOL STR.	RECOVERY 32%.
	{14.0-20.1}	COLOUR:BLACK A LESS ALTERED SECTION OF GRAPHITIC ARGILLITE. THE INT IS HIGHLY GROUND (BY THE DRILL) AND HAS POOR RECOVERY. IT APPEARS TO BE HIGHLY QZ VEINED.				RECOVERY 8%.
	{31.1-31.3} «CHT»	COLOUR:GREY GRAIN SIZE:F A NARROW SECTION OF MASSIVE GREY CHERT. THIS UNIT CONTAINS 1-10mm LAMINAE OF BLACK ARGILLITE (5%). THESE FORM NARROW BEDS THAT PARALLEL THE CORE AXIS. SLIGHTLY FOLDED WITH WEAK AXIAL PLANAR CLEAVAGE IN THE ARG BEDS. CHERT IS ALSO BANDED ON A 1cm SCALE. BEDDING	0-10			
32.30 TO 62.10	«CHT+ARG»	COLOUR:BLACK TO GREY GRAIN SIZE:F A WELL BEDDED INTERVAL COMPOSED OF 70% BANDED GREY CHERT AND 30% BLACK ARGILLITE AND CHERT. (SIL ARG?). THE UNIT IS WELL LAMINATED ON A mm TO cm SCALE. MASSIVE CHERT UNITS UP TO 7m WIDE ARE NOTED. THESE ARE MEDIUM TO PALE GREY AND WELL BANDED. SILICA REMOBILIZATION IS SUGGESTED BY PATCHY WHITE QZ STR. FINER CHERT BEDS IN THE ARG DOMINATED SECTIONS CONTAIN FINE PY LAMINAE (5mm) THAT APPEAR TO BE SYNGENETIC. INT IS WELL FOLDED. Z FOLDS AT 50.0m VERGE UP HOLE (TO THE NORTHEAST.)		SILICA REMOBILIZATION IN MASSIVE CHERT SECTIONS. DOL IS ALSO PRESENT AS FINE STRINGERS IN BOTH CHERTS AND ARGILLITES. (DOL<1%). BLACK CHERTS MAY BE SILICIFIED ARGILLITES (DIAGENETIC?).	«PY TR-1%». PRIMARILY AS SYNGENETIC LAMINAE IN THE ARGILLACEOUS SECTIONS. RARE PY AGGREGATES ARE NOTED. THESE REACH 15mm IN DIAMETER AND APPEAR TO BE PORPHYRIOBLASTIC.	
	{41.0-47.1} «MAS CHT»	COLOUR:GREY GRAINSIZE:F				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		MASSIVE GREY CHERT. WELL BANDED. SILICA REMOBILIZATION INTO PATCHY QZ STR. GRAPHITE PRESENT ON FRACTURE PLANES. FRACTURE CLEAVAGE @ 47.0 (LAMINATION)	45			
	{53.1-53.5} «FLT»	GOUGE ZONE				
	{56.8-60.1} «SER CHT+ ARG»	COLOUR:YELLOW-GREY A STRONGLY SERICITIZED INTERVAL. THE ARGILLACEOUS COMPONENT IS REPLACED BY BRIGHT YELLOW SERICITE. CHERT SECTIONS ARE RECRYSTALLIZED TO CREAMY WHITE QZ ZONES OR PSEUDO VEINS. THESE CONTAIN SERICITIC PARTINGS.		STRING SER, RECRYSTALLIZATION OF CHERTS TO WHITE VEIN-LIKE PATCHES.	«PY 1%» CONCENTRATED AS GRANULAR PATCHES IN THE SILICEOUS PATCHES.	
	{60.0-61.0} «CHT»	BANDED GREY AND BLACK CHERT. UPPER PART OF INT IS RECRYSTALLIZED GREY CHERT WITH STYLOLITIC GRAPHITE PARTINGS - POSSIBLY AFTER ORIGINAL ARGILLACEOUS LAMINAE.		PINK CARBONATE NOTED IN QZ STR AT 60.6m. STR IS 5cm WIDE.	PY V. TR.	
62.10 TO 66.20	«DOL MT» DOLOMITIZED ARGILLITES + CHERT.	COLOUR:GREY-BROWN GRAIN SIZE:F A STRONGLY DOLOMITIZED UNIT, POSSIBLY A MAFIC VOLCANIC. (TUFF). THE ROCK IS COMPOSED OF 80% FINE GRAINED GREY DOL WITH SHEETS OF ORANGE BROWN SERICITE. CLOSE TO THE BASE OF THE INT GREEN FUCHSITE IS PRESENT. UPPER CONTACT	85	INTENSE DOL ALT. AND WEAK TO MOD SERICITE ALT. DOL MAKES UP 80% OF THE ROCK. QZ IS ALSO PRESENT AS IRREGULAR PATCHES UP TO 3cm ACROSS.	«PY 3%»	MAFIC COMPOSITION INDICATED BY HIGH %AGE OF DOL AND PRESENCE OF FUCHSITE.
66.20 TO 121.20	«ARG +SILT»	COLOUR:GREY-GREEN AND BLACK GRAIN SIZE:F A WELL BANDED (TECTONIC) UNIT COMPOSED OF FINE, ALTERNATING LAYERS OF BLACK ARGILLITE (30%) AND GREEN -GREY SILTSTONE. THE ROCK IS WELL CLEAVED AND MOST ORIGINAL LAYERING HAS BEEN TRANSPOSED. WHERE VISIBLE (eg @ 105.4m) THE BEDDING IS SUB-PARALLEL TO CA-. THESE AREAS ARE FOLD HINGES. BANDING IS ON A 1mm TO 15cm SCALE. THICKER MORE MASSIVE BANDS APPEAR TO HAVE FINE FRAGMENTS (1mm), AND MAY BE TUFFACEOUS. ENHANCED DOLOMITE CONTENTS IN THESE ROCKS PERHAPS SUPPORTS		WEAKLY ALTERED. SILTSTONE BANDS ARE SLIGHTLY BLEACHED. VEINS ARE RARE. WHERE PRESENT THEY ARE DOL-QZ. THESE AVERAGE 10cm IN WIDTH.	PY TR.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		THIS.				
		CLEAVAGE @ 105.2	55			
		@112.7	60			
	{69.2-71.8}			MODERATELY SERICITIZED SECTION IN THE ARGILLITES. POSSIBLY RELATED TO QZ STR AND VEINS AT 69.2-69.4.		STRINGERS APPEAR TO HAVE WEAK SER ENVS.
	{99.0-99.4} «FLT»	GOUGE				
	{115.6-.9} «MT»	COLOUR:BUFF-GREEN GRAIN SIZE:F-M A MORE MASSIVE UNIT, POSSIBLY A BED OF TUFFACEOUS MATERIAL. FINE FELDSPAR CRYSTALS CAN BE SEEN WITH THE NAKED EYE. THE ROCK HAS A HIGHER DOL CONTENT (15%) THAN THE SURROUNDING SILTSTONES.		MOD PERVASIVE DOL(15%). SLIGHT SER.	NONE	
		FOLIATION @ 115.7	55			
121.20 TO 171.00	«MT» FINELY BEDDED MAFIC TO INT TUFF	COLOUR:BUFF/TAN GRAIN SIZE:F-M A FAIRLY NON-DESCRIPT INT CONSISTING PRIMARILY OF FINE GRAINED WELL LAMINATED MAFIC TUFFS WITH FAIRLY MASSIVE, COARSER GRAINED BEDS. LAMINATED SECTIONS ARE VISIBLE IN FOLD HINGES, WHERE ALTERNATING LAYERS OF BROWN TUFF AND WHITE VOL RICH MATERIAL ARE PRESENT ON A 1-3cm SCALE. UNIT IS MADE UP OF DOL AND SER. WITH MINOR CHL. CLOSE TO AND WITHIN QZ-DOL STR. COARSER BEDS HAVE A DISTINCT MOTTLED APPEARENCE, CAUSED BY SPOTS OF CHL. (POSS. AFTER AMPHIBOLE). THESE ARE MASSIVE AND NONBEDDED.		MED TO STRONG DOL ALT. SOME DOL FORMS WHITE "BEDS", PROBABLY PREFERENTIAL REPLACEMENTS OF PREEXISTING BEDS. YELLOW TO BROWN SHEETED SER +- LEUCOXENE GIVE ROCK ITS BROWN COLOUR.	«PY TR» MAINLY AS DISS CRYSTALS TO 10mm IN LAMINATED SECTIONS.	WHITE "BEDS" OF MASSIVE Fe DOL.- PRIMARY? INTERBEDDED UPPER CONTACT.
		FOLIATION @ 144.1	75			
		@ 122.8	43			
	{164.9-166.1} «ARG»	COLOUR:BLACK-GREY GRAIN SIZE:F A WELL SHEARED ARGILLITE INTERVAL. THE UNIT CONSISTS OF A TECTONICALLY BANDED TO LENSOID BANDED BLACK TO PALE GREY ROCK. PALE BANDS ARE		PERVASIVE - MODERATE DOL ALT OF PALE BEDS. DOL 20%.	NONE.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		STRONGLY DOLOMITIC, -NOT TYPICAL SILTSTONE. BANDING ON A 1-5mm SCALE. RELIEF BEDDING VISIBLE @ 165.3m.				
		FOLIATION @ 165.5	70			
		CHEVRON TYPE FOLDING AT 165.3.				
	{166.1-166.3} QZ-DOL VEIN	COLOUR:WHITE				
	{169.2-170.4} 80% QZ-DOL VEINS	COLOUR:PALE GREY IRREGULAR VEINS CUTTING FOL AND PARALLELING IT. VEINS CONTAIN STYLOLITIC PARTINGS OF GRAPHITIC MATERIAL. CLEAR CROSSCUTTING RELATIONSHIP WITH BEDDING.		NONE.	NONE - TR PY.	
	{170.4-170.8} «ARG»	COLOUR:BLACK TO PALE GREY GRAIN SIZE:F A SILICIFIED ARGILLITE INTERVAL. CORE HIGHLY BROKEN. ARGILLITE IS REPLACED BY GREY SILICA AND CUT BY QZ VEINS UP TO 5cm WIDE.				
171.00 TO 250.90	«MT»	COLOUR:GREEN TO BROWN GRAIN SIZE:F A FINE GRAINED LAPILLI POOR SECTION OF MAFIC TUFF. THIS INTERVAL PROBABLY CONSISTS OF ASH TUFFS - MAINLY CRYSTAL OR CRYSTAL LITHIC VARIETIES NO PRIMARY LAYERING IS SEEN. SHEARING HAS DESTROYED BEDDING. LENTICULAR FINE LAPILLI (TO 25mm) ARE SCATTERED THROUGHOUT. THESE ARE ROUNDED, MODERATELY FLATTENED AND ALIGNED ALONG FOL. COLOUR VARIATIONS FROM PALE GREEN TO BROWN TO PALE GREY REFLECT RAPIDLY CHANGING ALTERATION TYPES. THESE MAY BE REFLECTING PRIMARY COMPOSITIONAL CHANGES.		SEVERAL ALT TYPES OCCUR IN INTERVAL: 1. PERVASIVE DOL. 2. DOL - SER. 3. DOL - SER - PY. THESE ARE DETAILED BELOW.	«PY TR-1%» FINELY DISSEMINATED GRAINS IN MORE ALTERED SECTIONS.	
		FOLIATION @ 181.4	65			
		@ 196.9	50			
		@ 235.6	80			
		@ 248.1	90			

171-250.9 Ductile Fault Zone!

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	{170.0-178.2}	COLOUR:YELLOW GREY STRONGLY ALTERED SECTION. ROCK CONSISTS OF PALE GREY, FINE GRAINED DOLOMITIC MATERIAL WITH SHEETS OF YELLOW OR BROWN SERICITE. QZ PATCHES PARALLEL FOLIATION.		MOD DOL REPLACEMENT AND MOD SER ALT. SER OCCURS AS SHEETS ALONG FOLIATION. FOLIATED PARALLEL QZ DOL STRS WITH GRADATIONAL CONTACTS CONTAIN SEMI MASSIVE TO MASS PY OVER 1-2cm WIDTHS.	«PY 3%» AS DISS ALONG FOL, MAINLY IN SERICITIC SECTIONS. ALSO AS 1-2cm VEINS WITH QZ-DOL.	
	{178.8-180.9}	COLOUR:YELLOW		STRONG SERICITE ALT OF MAFIC UNIT. ROCK IS A FINE GRAINED, WELL FOLIATED SERICTIC PHYLLITE WITH WEAK DOL ALT. QZ VEIN @ 180.5m. 10cm ACROSS.	«PY 1-3%» AS SNAKEY FOLDED STR. (INCIPIENT STWKE). THESE AVERAGE 2mm IN WIDTH. SLIGHTLY CROSS CUT , FOL. => EARLIER THAN S2.	
	{180.9-184.8} «CHL ALT»	COLOUR:DARK GREEN SAME PRIMARY LITHOLOGY. THIS UNIT IS PERVASIVELY CHLORITIZED AND MODERATELY CARBONATIZED. GROUNDMASS IS A FINE GRAINED CHLORITIC PHYLLITE WITH NUMEROUS PALE GREEN TO GREY BANDS OF DOL UP TO 5cm ACROSS. THESE ARE PTYGMATICALLY FOLDED IN SOME INSTANCES. CHLORITIC SECTIONS HAVE BROWN EUHEDRAL DOL OR ANK SPOTS (TO 1mm). EUHEDRAL PY PORPHYROBLASTS UP TO 10mm ACROSS HAVE WELL DEVELOPED STRAIN SHADOWS. MASSIVE DOL SECTIONS WITH SHARP CONTACTS LOOK LIKE REPLACED BEDS.		MOD TO STRONG DOL ALT, AS VEINS, PERVASIVE ZONES AND SPOTS. CHL PERVASIVE IN HAZY ZONES - POSSIBLY ENVELOPES TO DOL VEINS.	PY TR. AS 10mm PORPHYROBLASTS.	
	{193.9-196.8} «MAS DOL»	COLOUR:PALE GREY GRAIN SIZE:F AN INTERVAL OF COMPETENT, POORLY CLEAVED CORE MADE UP ALMOST ENTIRELY OF FINE GRAINED, SUGARY TEXTURED DOL WITH A QUARTZ MATRIX. CONTACTS ARE TRANSITIONAL AT TOP FROM SERICITIZED AND CHL ALTERED MT. AT BOTTOM IT IS KNIFE SHARP AGAINST SERICITIZED MT.		EXTREME DOL ALT COMPLETE REPLACEMENT OF ORIGINAL UNIT BY FE DOL. DOL 90%. CRACK AND HEAL TEXTURES. QZ FILLED FRACTURES.	«PY TR-1%» IN SER STR.	COULD BE AN ORIGINAL DOL UNIT?
	{196.8-200.9}					

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	«M LAP.TF»	COLOUR:ORANGE GREY GRAIN SIZE:F A GOOD FRAGMENTAL UNIT. ROCK CONTAINS 20-30% FINE TO MEDIUM SIZED LAPILLI (5-30cm) IN A WELL FOLIATED AND HIGHLY ALTERED MATRIX. MATRIX IS INTENSLY DOL-SER ALTERED. DOL IS FINE GRAINED AND PERVASIVE. SER OCCURS AS YELLOW-ORANGE SHEETS AND AS PERVASIVE REPLACEMENT OF THE ORIGINAL ROCK. FRAGS ARE COMPLETELY PYRITIZED, PARTICULARILY NEAR BASE OF INT. FOLIATION @ 200.3m	86	INTENSE SER, DOL AND PY ALT. FINE PY SELECTIVELY REPLACES THE LAPILLI. DOL 40%-60%, SER 30%.	«PY 5%» AS REPLACEMENTS OF LAPILLI.	
‡200.9-204.8‡	«LAP TF»	COLOUR:MED GREY GRAIN SIZE:F-M A LESS ALTERED INT. GOOD LAPILLI FROM 5-20mm IN LONG DIMINSION COMPRISE 15% OF THE INTERVAL. THESE HAVE ROUNDED SHAPES AND ARE SLIGHTLY ELONGATED ALONG THE FOLIATION. (ASPECT RATIO 2:1) MATRIX IS MED GRAINED AND CONSISTS OF A MIXTURE OF CHL, DOL AND SER. GRAINS OR CRYSTALS OF DOL AVERAGE 2mm IN WIDTH.		WEAK TO MOD CHL, WEAK DOL. SER INCREASES DOWN INT. DOL 20%, CHL 5%, SER 5-20% (DOWN).	«PY-1%»OCCURS AS FINE GRAINED STRINGERS IN THE MORE SER RICH SECTIONS.	
‡204.8-212.8‡				PERVASIVELY SER AND DOL ALT. DOL OCCURS AS LENS SHAPED PATCHES AND AS A FINE REPLACEMENT OF THE MATRIX (25%). SER IS AN ORANGE COLOUR. IT VARIES FROM MOD TO INTENSE OVER INT. MAINLY AS FOL PARALLEL SHEETS.	«PY 3%» AS REPLACEMENTS OF LAPILLI IN MORE SER SECTIONS AND AS IRREGULAR, FINE GRAINED STR.	
‡212.8-213.1‡	«SIL. ALT»	INTENSE SILICIFICATION. CONTACTS SHARP. BEDDING? UPPER CONTACT	75	ROCK REPLACED BY GREY CHERTY QZ. DOL SPOTS AND STR STILL PRESENT. (<10%)	FINE PY STR OR LAMINAE IN THE CHERTY ROCK.	
‡230.1-231.0‡	«FLT»	GOUGE ZONE AND FAULT BRECCIA. LOWER CONTACT	35			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	‡231.0-243.6‡ «SER DOLMT»	COLOUR:YELLOW/GREY GRAIN SIZE:F STRONGLY DOL ALTERED MT. ROCK CONSISTS OF LENSOID BANDED, MASSIVE DOL SEPARATED BY WELL SHEETED SERICITE. SER INTS RANGE FROM 1mm TO 20mm SER HAS A DISTINCTIVE ORANGE COLOUR. PRIMARY TEXTURES ARE NOT PRESERVED.		DOL 30%, SER 15%. QZ OCCURS IN 1-3cm QZ DOL VEINS. THESE HAVE SHARP CONTACTS AND GENERALLY PARALLEL FOL.	«PY 5%» PY OCCURS MAINLY AS IRREGULAR STR THAT FOLLOW THE SER SHEETS. IN SOME PLACES EARLIER PY STR ARE DEFORMED BY FOL.	
	‡243.6-250.9‡ «DOL MT»	COLOUR:GREY GRAIN SIZE:F SIMILAR TO THE ABOVE INT. SER GRADUALLY DECREASES BELOW 243.6m. HERE THE ROCK IS LESS FOLIATED AND MORE MASSIVE DOL COMPRISES OVER 60% OF THE ROCK.		INTENSE DOL ALT. DOL 60% SER DECREASES TO 5%.		
250.90 TO 278.90	«MPYR» MAFIC LAPILLI TUFF.	COLOUR:GREY GREEN A MORE TYPICAL MAFIC LAPILLI TUFF. THIS UNIT HAS A DISTINCT FRAGMENTAL APPEARENCE. ALTHOUGH HIGHLY ALTERED THE LAPILLI ARE STILL VISIBLE. THEY ARE COARSE GRAINED (30-60mm) AND COMPRISE 40-60% OF THE ROCK. SHAPES ARE GENERALLY ROUNDED WITH A STRONG FLATTENING ALONG FOL.		STRONG DOL REPLACEMENT, DECREASING IN INTENSITY DOWN INT. TO 268.3m ROCK CONTAINS 60% DOL. THIS CAUSES THE ROCK TO HAVE A PALE GREY SUGARY TEXTURE. BELOW THIS LEVEL THE ROCK IS LESS ALTERED. CHLORITE IS PRESENT. DOL 30-50%.	«PY TR»	
	‡262.9-263.1‡ QZ-DOL VEIN	CONTACTS TWO STAGES OF DOL NOTED IN VEIN. PALE GREY DOL MAKES UP THE EARLIER VEIN. THIS IS CUT BY 10mm CREAM DOL STR THAT ALMOST PARALLELS CA. THESE ARE TRUNCATED BY SHARP CONTACTS.	50			

Ductile Fault Zone
171 - 250.9

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
278.90 TO 284.20	«ARG + CHT»	A STRUCTURALLY DISRUPTED SECTION OF FINELY BEDDED GREY CHERT AND GRAPHITIC ARGILLITE. CHERT BEDS ARE BROKEN INTO A PROTO BRECCIA BY FOLIATION PLANES. WHERE PRESERVED - BEDDING IS ON A 1cm SCALE.		QZ-DOL STR UP TO 5cm WIDE OCCUR IN THE UPPER PART OF THE INT. THESE CUT FOLIATION. WEAK SIL IN LOWER PART. SILICA REMOBILIZED FROM CHERTS?	«PY TR» AS COARSE (20mm) CRYSTAL AGGREGATES IN VEINS.	
	{281.3-282.4} «DOL MT»	COLOUR:CREAM-GREY GRAIN SIZE:F SAME AS PREVIOUS INT. LOOKS LIKE AN INTERBED OF MAFIC IN THE ARGILLITE. THIS IMPLIES A CONCORDANT, TRANSITIONAL CONTACT.		INTENSE DOL. ALT. DOL>60%. LENSOID BANDED MASSES OF MED TO FINE GR DOL.		
284.20 TO 288.40	«DOL MT»	SIMILAR TO THE ABOVE. THIS UNIT IS LESS MASSIVE THAN THE PREVIOUS TUFF. PATCHES OF MASSIVE DOL ARE SEPARATED BY MODERATELY WELL FOLIATED CHL-DOL PHYLLITE. SER OCCURS CLOSE TO NARROW QZ STR.		MODERATELY DOL, WEAK SER. QZ STR PRESENT NEAR LOWER CONTACT. THESE HAVE WEAK SIL ENVELOPES TO SAM FROM VEIN.		
288.40 TO 293.60	«ARG+SERT» ARGILLITES.	COLOUR:YELLOW TO DARK GREY GRAIN SIZE:F FINELY LAMINATED AND TECTONICALLY BANDED ARGILLITE UNIT WITH A MINOR (15%) CHERT COMPONENT. ROCK IS WEAKLY SERICITIZED TO SERT OVER 5-80cm INTERVALS. UNALTERED SECTIONS ARE BLACK AND GRAPHITIC. CHERT BANDS VARY FROM 1cm TO 30 CM. THESE ARE BROKEN UP BY THE FOLIATION INTO PSEUDOBRECCIA.		VARIABLE SERICITE ALT OVER 1mm TO 30cm WIDTHS. INCREASES STEADILY DOWN INTERVAL. QZ VEINS WITH WEAK SIL ENVELOPES ARE NOTED @ 290.8m, 293.4m, AND 293.6m.	«PY TR-3%, CP TR» PY IS DISSEMINATED IN SERICITIC SECTIONS. CP GRAINS NOTED IN QZ STR @ 790.8m.	
	{291.9-292.3} «CHT»	COLOUR:GREY GRAIN SIZE:F MASSIVE TECTONICALLY DISRUPTED GREY CHERT. INT CONTAINS PATCHES OF WHITE, REMOBILIZED QZ WITH INTERSTITIAL PY STR. MINUTE DOL RHOMBS ALSO NOTED. FOLIATION @ 292.3	60	WEAK SIL AND TR DOL.	«PY 3-5%» AS IRREGULAR STR.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
293.60 TO 302.00	«CHT» BANDED GREY CHERT	COLOUR:GREY GRAIN SIZE:F A WELL BANDED UNIT COMPOSED OF 98% GREY CHERT. PRIMARY LAYERING IS WELL PRESERVED, ALTHOUGH IT HAS BEEN DISRUPTED BY A PROMINENT FRACTURE CLEAVAGE THAT FORMS THE PLANAR FABRIC. FRACTURE CLEAVAGE @ 294.6 @ 297.4 CLEAVAGE PLANES HAVE GRAPHITIC PARTINGS.	 55 65	VERY WEAK DOL AS FINELY DISS CRYSTALS.	«PY 5%, CP TR, SPH TR, GL TR» SULPHIDES ARE RESTRICTED TO A STRINGER ZONE FROM 299.8 TO 302.0. ABOVE THIS INT PY IS TR-1% AS FOL PARALLEL DISS.	ASSAY 299.8-300.3 300.3-300.8 300.8-301.3 301.3-302.0 302.0-303.5
	{299.8-302.0} «SX STWK»	SAME BANDED CHERT AS ABOVE. THIS INT CONTAINS 15% SULPHIDES IN BRANCHING 1-3cm STRINGERS. THESE APPROXIMATELY FOLLOW FOL AND CUT EARLIER DOL STR. THEY ARE THEMSELVES CUT BY QZ STR. A 10cm QZ VEIN OCCURS FROM 301.1 TO 301.3m. THIS CONTAINS COARSE BLEBS OF CP, PY AND ASPY.		WEAK SIL.	«PY 15%, CP 1%, SPH TR-1%, GL TR, ASPY 1%, Tt TR» MOST SULPHIDES OCCUR IN 1-3 cm WIDE STRINGERS.	
302.00 TO 324.90	«SER ARG»	COLOUR:YELLOW-GREY GRAIN SIZE:F A TYPICAL SECTION OF SERICITIZED ARGILLITE. THIS ROCK IS WELL BANDED (TECTONIC) ON A 1mm SCALE DARK BANDS ARE GRAPHITIC. FOLIATION @ 316.6m PRIMARY LAMINATION CAN BE SEEN IN ISOLATED FOLD HINGE ZONES. HERE THE UNITS PARALLEL THE CA. FINE PY STR UP TO 2mm PERMEATE THE CLEAVAGE PLANES IN THE MORE SERICITIC SECTIONS. A CROSS CUTTING ALTERATION FRONT CAN BE SEEN AT 303.8m. THIS	 84	STRONG SER AND WEAK PATCHY SIL OVER NARROW (5-15cm) INTERVALS. QZ VEINS WITH UP TO 20% DOL OCCUR AT 20-40cm INT THESE VARY FROM 5-10cm.	«PY 5%, CP TR, ASPY TR» PY AS FINE FOL PARALLEL STR. ALSO OCCURS WITH ASPY IN CROSS CUTTING QZ VEINS. THESE RANGE FROM 1-3cm IN WIDTH	GEOCHEM: ALTERATION FRONT IN ARGILLITES.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		FOLLOWS FOL AND REPLACES ARGILLITE.				LATE STAGE POST DEFORMATION!!
	{312.8-313.3} «ARG»	COLOUR:BLACK FOLIATION @ 312.9 UNALTERED INTERVAL.	68	QZ VEIN AT V CONTACT. 3cm WIDE.	ASPY 3%, PY 1-5%, SPH 5% (IN VEIN ONLY)	
	{313.3-313.9} «FLT»	GOUGE ZONE.				
324.90 TO 333.60	«BRX»	COLOUR:PALE GREY A PALE TO MEDIUM GREY, WELL FOLIATED BRECCIA UNIT COMPOSED OF TIGHTLY PACKED, 5-25mm, ROUNDED LITHIC FRAGMENTS. THESE ARE SLIGHTLY FLATTENED ALONG FOLIATION. ASPECT RATIO 2:1. DOMINENT CLASTS ARE OF GREY CHERT AND HIGHLY DOLOMITIZED MATERIAL- POSSIBLY VOLCANIC. THESE COMPRISE OVER 60% OF THE UNIT. HIGHLY ELONGATED BLACK ARGILLITE CLASTS ALSO PRESENT (1-3%). UNIT IS CRUDELY BEDDED ON A 50cm SCALE. TOP 1.5m IS ARGILLITE RICH.(SEE BELOW). POSSIBLY GRADED UNITS. FOLIATION @ 326.7	45	MOD. PERVASIVE DOL. AND SER. DOL OCCURS AS 1-2cm PATCHES IN THE BRX MATRIX (15%). SERICITIZATION CAUSES PHYLLITIC SHEEN ON FOL PLANES.	«PY 1-3%, SPH TR» PY OCCURS AS DISS CUBES UP TO 5mm ACROSS. SPH NOTED IN 2cm STR AT 328.0m	CRUDELY BEDDED UNIT. INTERBEDS OF BLACK ARG APPEAR TO BE CAUGHT IN BRECCIA RIP-UPS. e.g. @327.6m.
	{324.9-327.6m} «ARG+SILT»	COLOUR:BLACK GRAIN SIZE:F A MODERATELY WELL BEDDED (1-3cm SCALE) BLACK TO GREY SED UNIT. PALE BEDS APPEAR TO BE SILTY OR FINE SAND. BRX IS NOTED OVER 5cm INT AT 326.2m AND 326.4m. THESE CONTAIN SERICITIZED AND UNALTERED BLACK ARGILLITE CLASTS UP TO 20mm IN LENGTH. FOLIATION @ 324.5 @ 326.5	 60 60	WEAK TO NONE. DOL 1%.	PY CRYSTALS UP TO 5mm ACROSS HAVE QZ-CB STRAIN SHADOWS. «PY TR-1%»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
333.60 TO 335.40	«MUT+ARG» PYRITIC SILTITE + BLK CHERTY ARG	COLOUR:BLACK TO DARK BROWN GRAIN SIZE:F A FINE GRAINED, WELL FOLIATED UNIT COMPOSED OF THREE DISTINCT LITHOLOGIES; PYRITIC SILTITE, MASSIVE DOL AND BLACK CHERTY ARGILLITE. FOLIATION @ 334.5	70			
	{333.6-334.5} «MUT»	COLOUR:BROWN GRAIN SIZE:F A FINE GRAINED PYRITIC SEDIMENT. TYPICAL OF WHAT HAS BEEN REFERRED TO AS MUDDY TUFF. THE ROCK IS MADE UP OF 60-75% V. FINE GRAINED PY WITH A SERICITIC MATRIX. IT CONTAINS PALE, LENTICULAR PATCHES SUGGESTING THE PRESENCE OF SMALL CLASTS.		WEAK DOL ALT. DOL OCCURS AS FINE (<1mm) SPOTS AND PATCHES.	«PY 60-75%»	
	{334.5-334.9} «DOL SEDS»	COLOUR:PALE GREY GRAIN SIZE:F AN UNUSUAL UNIT CONSISTING OF PALE GREY BANDS AND PATCHES OF PERVASIVELY DOLOMITIZED MUT? DOL MAKES UP 30-40% OF THE UNIT AND OCCURS AS FINE GRAINED REPLACEMENT. REMNANT WHISPS OF PYRITIC SILTITE ALSO NOTED.		STRONG DOL - 30-40% AS PERVASIVE REPLACEMENTS. 1cm QZ STR WITH 10% DOL CUT INT.	PY 5-10%	COULD ALSO BE A CARBONATE EXHALITE-BUT NOT MUCH TO SUPPORT THIS.
	{334.9-335.4} «PY ARG»	COLOUR:BLACK TO BROWN GRAIN SIZE:F A WELL LAMINATED UNIT CONSISTING OF A BLACK CHERTY ARGILLITE WITH LAMINAE OF SYNGENETIC PY. THESE OCCUR ON A 1-5mm SCALE. UNIT IS FOLDED AND CUT BY QZ STR.		QZ-DOL STR TO 15mm ACROSS CUT FOLIATION AND ARE FOLDED WITH BEDDING.	«PY 25%» AS SYNGENETIC LAMINAE IN ARGILLITE.	SYNGENETIC PY.
335.40 TO 411.20	«INT TUFF» INTERMED-IATE ITAL TUFFS	COLOUR:PALE GREY GRAIN SIZE:F-M A THICK, RELATIVELY MONOTONOUS INTERVAL OF FINE TO MEDIUM GRAINED, MODERATELY WELL FOLIATED INT. TUFF. INTERVAL IS CRUDELY BEDDED ON A 50cm TO		WEAK SER. GIVE ROCK A PHYLLITIC SHEEN.	«PY TR-3%» PY OCCURS AS FOL PARALLEL MICRO VEINLETS <1mm IN WIDTH AND RARE	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		1.5m SCALE. MOST OF UNIT APPEARS TO BE A CRYSTAL TUFF. IT CONTAINS 30% 1-3mm WHITE FELDSPAR CRYSTALS IN A FINE SERICITIC MATRIX. FINE GRAINED 1mm PY STR FOLLOW FOLIATION AND GIVE THE ROCK A DISTINCTIVE TEXTURE. LAPILLI SIZE FRAGMENTS UP TO 35mm IN LENGTH ARE NOTED NEAR THE TOP CONTACT. THESE MAKE UP 15-30% OF THE ROCK AND APPEAR TO BE RESTRICTED TO 335.4-338.3m.			BRANCHING PY VEINS UP TO 15mmIN WIDTH. THESE CLEARLY CUT FOLIATION.	
		FOLIATION @ 350.3m	60			
		@ 364.5m	66			
		@ 383.7m	68			
	{391.9-394.4} «DAC PORPH»	COLOUR:DARK TO MEDIUM GREY GRAIN SIZE:F A GLASSY OR SILICEOUS, MASSIVE UNIT WITH A DISTINCT FELDSPAR PHYRIC TEXTURE. ROCK CONTAINS 40-60% EUHEDRAL PLAGIOCLASE CRYSTALS IN AN APHANITIC GLASSY MATRIX OR GROUNDMASS. THIS COULD BE A FLOW OR SILL UNIT.		NONE.	PY STRINGERS CUT MORE SILICEOUS PARTS OF INT.	
411.20 TO 456.30	«SER IV»	COLOUR:PALE BROWN A MODERATELY ALTERED INT IN THE INTERMEDIATE SECTION. THE ROCK IS WELL FOLIATED AND CRUDELY TECTONICALLY BANDED. YELLOW-ORANGE SERICITIC SHEETS TO 5mm IN WIDTH GIVE THE ROCK A DISTINCTIVE APPEARRANCE. BETWEEN THE SER SHEETS THE INT. VOLCANIC IS SILICIFIED AND SLIGHTLY DOLOMITIZED. NUMEROUS FOL PARALLEL QZ-DOL STR (TO 15mm WIDE) ARE STRETCHED INTO LENTICULAR REMNANTS. THESE SHOW CROSSCUTTING QZ HEALED PULL-APART VEINLETS. PATCHES UP TO 25mm ACROSS OF A HARD PURPLE COLOURED MINERAL ARE NOTED. IT RESEMBLES CORDIERITE.		MOD-STRONG SER (15-30%) AS SHEETS ALONG FOL PLANES. WEAK DOL. (5-15%) IN FOL PARLLEL VEINS AND AS A PERVASIVE REPLACEMENT OF MATRIX.	«PY 3%» IT OCCURS AS DISSEMINATED CRYSTAL AGGREGATES (TO 5mm) IN MORE SERICITIC SECTIONS. ALSO AS FOL PARALLEL WHISPS AND IN GR PODS TO 20mm IN LENGTH. PTYGMATICALLY FOLDED PY STR NOTED AT SEVERAL LOCATIONS.	
		FOLIATION @ 430.2m	60			
		@450.4m	65			
	{430.9-431.2} «FLT»	GOUGE				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	{437.0-437.1} «FLT»	GOUGE				
	{454.0-456.0} «50%QZVEIN»	INTERVAL CONTAINS 50% WHITE QZ VEINS THAT CROSS CUT FOLIATION. VEINS HAVE IRREGULAR, DIFFUSE MARGINS. WIDTHS RANGE FROM 4-10cm.		VEIN CONTAINS 20% FLESH COLOURED CARBONATE. CHL ALT OF WALL ROCK INCLUSIONS.		
456.30 TO 495.30	«DOL INTTF»	COLOUR:PALE GREY GRAIN SIZE:F A MASSIVE, HOMOGENEOUS UNIT. NO BEDDING OR BANDING PRESENT. POORLY FOLIATED. VISIBLE MINERALS IN THE GROUNDMASS INCLUDE DOLOMITE, CHLORITE AND SERICITE. RARE PALE BROWN TO GREY SILICEOUS LENSES AND BANDS (RESEMBLING DACITE SEEN ABOVE) MAY BE LAPILLI. THESE ARE FINELY SPOTTED WITH A PALE MINERAL (<1mm). THERE MAY BE RELIEF FELDSPAR FRAGMENTS OR PHENO'S. QZ EYES UP TO 1mm ACROSS ALSO NOTED. FOLIATION @ 474.4	65	ROCK IS MODERATELY DOLOMITIZED (DOL TO 30%). DOL OCCURS AS PERVASIVE REPLACEMENT OF THE MATRIX AND AS FOL PARALLEL SPOTS AND STREAKS. THE REMAINDER OF THE ROCK CONSISTS OF CHLORITE AND SERICITE. QZ-DOL VEINS UP TO 5cm ACROSS ARE NOTED <1mm EUHEDRAL DOL PORPHYROBLASTS APPEAR TO BE REPLACING FELDSPARS./\ \/	«PY 3%» GENERALLY SPARSELY DISTRIBUTED. WHERE SEEN IT OCCURS AS 1-10mm STR THAT CUT FOL. DISSEMINATED 1-3mm CRYSTAL AGGREGATES ALSO NOTED.	POSSIBLE DACITE TUFF BEDS AT 484.0m. (OR DYKES). THESE HAVE SHARP CONTACTS!
	{489.9-495.3}	BROKEN CORE				93% RECOVERY.
495.30 TO 501.70	«INT TUFF» QZ-FELDSPAR CRYSTAL TUF	COLOUR:PALE YELLOW-GREY GRAIN SIZE:F A TECTONICALLY DISRUPTED AND ALTERED INTERMEDIATE TUFF. THE UNIT APPEARS TO BE BRECCIATED TOWARDS THE LOWER CONTACT. THIS IS FAULT RELATED. TEXTURALLY THE ROCK IS QUITE VARIABLE. ALTERATION AND BRECCIATION ARE RESPONSIBLE.		STRONGER ALTERATION THAN IN PREVIOUS INT. DOL PERVASIVELY REPLACES THE GROUNDMASS (60% +) AND OCCURS IN NUMEROUS VEIN REMNANTS AND CROSS CUTTING STR. BROWN SERICITE IS PRESENT BETWEEN BRECCIA FRAGMENTS AND IN FOL PARALLEL SHEETS OR STR. (5%). IT INCREASES TO 25% AT LOWER THIRD OF INT WHERE IT OCCURS AS A PERVASIVE ALT.		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
501.70 TO 515.40	«ARG+SILT» INTERBEDDED ARGILLITE AND SILT-STONE	COLOUR:BLACK TO GREY GRAIN SIZE:F A TECTONICALLY DISRUPTED UNIT OF FINELY INTERLAMINATED BLACK ARGILLITE AND GREY SILTSTONE. STRONG FOLIATION HAS CAUSED TRANSPOSITION OF BEDDING. BANDING IS ON A 1-5mm SCALE. INTERVAL IS PARTIALLY BRECCIATED NEAR THE UPPER CONTACT. THIS APPEARS TO BE A LATE BRITTLE FAULT STRUCTURE. QZ-DOL VEINS CUT THE SHEARED ARGILLITE ADJACENT TO THE FAULT BRECCIAS. FOLIATION @ 506.2	70	WEAK SER OF SOME ARGILLACEOUS BANDS. THIS IS MARKED BY A CHANGE IN COLOUR FROM BLACK TO YELLOW GREY. ALT ONLY PRESENT OVER 1cm WIDTHS. QZ DOL VEINS CUT UNIT AT 504.4, 503.9, 508.5, AND 512.7-512.9m. SER INCREASES TO FAULT CONTACT AT 515.4m.	«PY TR 1%» AS EUHEDRAL CRYSTALS ASSOCIATED WITH THE VEINS.	REA SEDS!!!
	{501.7-502.7} «FLT BRI»	FAULT BRECCIA.				
	{504.4-504.6} QZ-DOL VEIN	COLOUR:GREY A FINE GRAINED, CHERTY QZ VEIN WITH UP TO 30% WHITE DOLOMITE AS PATCHES. QZ IS PARTIALLY BRECCIATED WITH INTERSTICES FILLED BY DOL. UPPER CONTACT	70			
	{506.7-507.4} «FLT BRI»	FAULT BRECCIA.				
	{513.2-514.4} «FLT BRI»	FAULT BRECCIA.		MOD SER OF ARGILLITES ABOVE BRECCIA.		SERICITIZATION ON EITHER SIDE OF FAULT CONTACT.
515.40 TO 522.00	«SER FIT» INTERMED-IATE CRYST-AL TUFF	A STRONGLY SERICITIZED INTERVAL OF INTERMEDIATE FELDSPAR CRYSTAL TUFF. ORIGINAL ROCK IS COMPOSED OF 40-60%, 1-3mm WHITE FELDSPAR CRYSTALS IN A FINE GRAINED ASHY MATRIX. LAPILLI SIZED FRAGMENTS ARE NOTED OVER SHORT SECTIONS. TECTONIC BRECCIAT-ION ALSO PRESENT AT 520.1m. THIS UNIT IS PROBABLY A DOWN DROPPED BLOCK OF THE PREVIOUS INTERMEDIATE		STRONG SER AT FAULT CONTACT,DECREAS-ING TO W. WEAK AT LOWER CONTACT. THIS ALT APPEARS TO BE RELATED TO THE FAULT.	«PY TR 1%» AS DISSEMINATIONS UP TO 3mm ACROSS AND AS FINE GRAINED STREAKS ALONG FOL.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		TUFF INTERVAL. FOLIATION @ 519.0	70			
522.00 TO 556.30	«ARG+WAK«	COLOUR: GREY TO BLACK				
TO 528.60	ARGILLITES AND COARSE WAKE.	GRAIN SIZE:F-C A WELL BEDDED TURBIDITE SEQUENCE COMPOSED OF 20% WELL LAMINATED BLACK ARGILLITE AND 80% COARSE, GRADED WACKE BEDS. GRAIN SIZE VARIES FROM FINE SILT TO PEBBLES. GRADING INDICATES TOPS DOWN. BEDS VARY FROM 3cm TO 2m IN THICKNESS. COARSER UNITS ARE HETEROLITHIC AND ARE DOMINATED BY CHERTY QZ PEBBLES WITH LESSER BLACK ARGILLITE (RIP UPS?) AND WHITE QZ VEIN. FINER GRAINED BEDS SHOW EVIDENCE OF TIGHT FOLDING. FOLIATION @ 537.9 END OF HOLE.	55	NONE.	«PY TR» AS DISS PORPHYROBLASTS.	

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22214	299.80	300.30	0.50	.012	.12	.07	6.0	.37															
BCD22215	300.30	300.80	0.50	.010	.36	.10	6.7	1.00															
BCD22216	300.80	301.30	0.50	.212	.67	.32	22.1	.17															
BCD22217	301.30	302.00	0.70	.143	.20	.30	4.8	.35															
BCD22218	302.00	303.50	1.50	.008	.02	.02	2.0	.05															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
	0.00	0.00	0.00																									

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION
0.00 TO 9.40	«OB»			
0.00 TO 1.00				
TO 9.40				
9.40 TO 38.90	MAFIC PYROCLAS-TICS «MPYRO»	Pale to dark green mottled. mg. A fairly competent series of flows and fragmentals. FOLIATION 9.4-15.1 - Mafic flows 15.1-32.3 - Mafic lapilli Tuff carbonitized lapilli.	70	Strong, (72%) pervasive dolomite a with qtz. dolomite veins (crosscut ~2% of interval). Sericitic lappi moderate pervasive sericite (pale green) defines foliation. Trace f site (with sericitized lapilli) st crosscutting, black chlorite strin
38.90 TO 46.20	SERICITIZED CHERT ARGILLITE «SERCH+ARG»	Pale green. fg. Fine laminae of white chert and sericite. Strongly foliated. Stretched and boudined. Semi transposed. FOLIATION 60-80% Chert 15-30% Sericite	60	15-30% Sericite 2-3% qtz Veins
47.00 TO 69.30	SEDIMENTARY BRECCIA «SED BX»	Grey to black mottled. fg. Brecciated laminae of chert and graphitic argillite. General increase in laminar fabric at structural base. Exellent crenulation cleavage, transposition. FOLIATION {68.6-69.3m} «Pysed» Pyritic sediment, broken chert fragments (rounded) in a pyritic matrix.	70	Localized, crosscutting sericitic intervals 2-15cm. Pyritization and sercitization.
69.30 TO 113.60	CHERT «CHT»	Grey to white. Laminated cherts variably brecciated.		Trace sericite. 5% pre foliation stringers.

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 102+00mW section

PLOTTING COORDS GRID: Sam
NORTH: 892.00N
EAST: 10155.00W
ELEV: 1262.38

COLLAR GRID AZIMUTH: 180° 0' 0°

DATE STARTED: May 27, 1989
DATE COMPLETED: June 1, 1989
DATE LOGGED: June 1, 1989

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

PURPOSE: UTM: 3219.81W 70609N

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
74.90	-	-89° 0'	ACID	ok	
110.00	-	-83° 0'	ACID	OK	
157.30	-	-83° 0'	ACID	OK	
216.40	-	-82° 0'	ACID	OK	Poor test double etch.
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	
-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
113.60 TO 174.00	ARGILLITE + WACKE «ARG+WCKE»	Interbedded sequences of argillite + wacke. Fresh, unaltered package lacking brecciation. FOLIATION	70	172.5-174. - 20-30% PERVASIVE SERICITE. {113.8-116.5} interbedded chert, pyrite and argillite.	20-30% Py. fg. diss.	121.7m crossbeds indicate tops up hole. {161.3-161.4} Flt.
174.00 TO 192.90	PYRITIC MUDDY TUFF «PYMUT»	Grey. fg. to mg. Grey homogenous, well foliated muddy tuff. Graphitic intervals and relict bedding indicate sedimentary origin. Excellent crenulation cleavage and stretched fragments (2-5cm). FOLIATION	70	Pyritized and moderately sericitized. Pervasive dolomite porphyroblasts (10%-1-2mm).	«10-25% fg. py.»	Note abundance of 'silvery' sericite. {174.0-177.4} «Flt. 20% qv»
192.90 TO 220.80	CHERT BRECCIA «CHBX»	Grey/black. fg. Dominated by grey to white chert with graphitic matrix. 5-10% prefoliation qtz veins. possible concident graphitic sediment + chert deposition with post foliation brecciation. FOLIATION	80	Pervasive silicification. Minor sericite. Abundance of graphite in partings. 213.6-216.2 traces of fuchsite.	Bands of Py. 2-10%. {193.4-193.6} «3% Sph» {194.5-194.8} «2% Sph» {196.5-198.0} «1% Sph» {202.7-203.0} «3% Sph, 2%Ft» Pyrite injections.	Mineralization assoc. with qtz. veins. {217.6-218.4} «Flt.» {218.4-219.0} «Flt. breccia» strong fuchsite.
220.80 TO 231.00	SERICITIC ARGILLITE «SERARG»	Pale green. fg. Well laminated bands of argillite and sericite. FOLIATION	85	Variable (15-30%) sericite, minor qtz. dolomite veins.	«3-4% fg. py.»	
231.00 TO 268.20	MAFIC PYROCLASTICS «MPYRO»	Green. mg. A competant unit with minor argillite interbeds. Generally chloritic matrix with pale carbonitized lapilli sized clasts, 10% qtz veins {241.6-243.8} «CHT + ARG» FOLIATION	50	Moderate pervasive sericite. Increasing to strong at vein envelopes. «233.5-234.5» qv with silicified wallrock fragments.	5-10% py. background whisps assoc. with early qtz veins. {254.5-254.6} «MSSX» 80% py, 3% sph. {257.8-258.6} «MSSX» 80% py, 5% gn. 39% sph. {260.5-261.0} «QV, 3% CPY, 3% GN»	Excellent massive sulphides. Rea type? Associated with veining. Lower sulphide contact discordant to foliation. Contacts are sheared.
		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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD20854	113.60	115.10	1.50	.011	.02	.01	2.2	.03															
BCD20855	115.10	116.10	1.00	.019	.09	.01	10.0	.24															
BCD20857	174.00	174.30	0.30	.589	2.13	.63	72.4	1.08															
BCD20858	175.10	175.80	0.70	.066	.41	.97	13.5	.22															
BCD20859	179.80	181.20	1.40	.008	.02	.01	2.8	.01															
BCD20860	193.20	194.60	1.40	.248	1.43	.71	69.8	.17															
BCD20861	196.60	197.80	1.20	.112	.49	.40	19.7	.02															
BCD20862	197.80	198.40	0.60	.048	.17	.22	9.9	.14															
BCD20863	198.40	198.90	0.50	.06	.54	.51	11.2	.05															
BCD20864	202.90	203.20	0.30	.819	2.02	2.52	344.0	.13															
BCD20867	253.10	254.40	1.30	.002	.01	.06	2.0	.02															
BCD20868	254.40	254.60	0.20	.207	.59	.24	23.9	.46															
BCD20869	254.60	255.10	0.50	.022	.02	.04	3.8	.12															
BCD20870	257.40	257.90	0.50	.007	.01	.02	.7	.02															
BCD20871	257.90	258.60	0.70	.704	3.19	6.64	112.0	.62															
BCD20872	258.60	259.00	0.40	.005	.03	.06	1.8	.01															
BCD20873	259.00	260.50	1.50	.003	.01	.04	2.4	.02															
CD20874	260.50	261.30	0.80	.198	.22	.38	70.0	.03															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
20851	32.30	35.30	3.00	44.88	11.19	10.26	7.21	.11	2.26	7.37	.45	.99	.069		39	115	123		60	129	1.3	123	.04		1.75		205	6
20852	61.90	64.90	3.00	61.85	11.76	.55	5.52	.32	2.5	6.49	.25	.47	.061		28	980	110		10	72	1.0	110	.10		.73		40	10
20853	84.10	87.00	2.90	93.39	2.26	.12	.46	.01	.65	1.43	.02	.11	.014		96	36	22		5	26	.05	22	.01		.052		9	1
20856	142.30	145.30	3.00	82.3	8.86	,53	.73	.45	1.52	1.69	.02	.43	.146		10	48	14		51	194	0.4	14	.01		.09		10	1
20865	211.40	214.40	3.00	79.75	7.61	.20	.75	.16	1.78	4.47	.02	.38	.068		23	38	27		5	5	.5	27	.01		3.65		134	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG260 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 102 + 00 SECTION

PLOTTING COORDS GRID: SAM
NORTH: 892.00N
EAST: 10155.00W
ELEV: 1262.38

ALTERNATE COORDS GRID:
NORTH: 8+92N
EAST: 101+55W
ELEV: 1262.38

COLLAR DIP: -50° 0′ 0″
LENGTH OF THE HOLE: 218.20m
START DEPTH: 0.00m
FINAL DEPTH: 218.20m

COLLAR GRID AZIMUTH: 180° 0′ 0″
COLLAR ASTRONOMIC AZIMUTH: 225° 0′ 0″

DATE STARTED: June 2, 1989
DATE COMPLETED: June 6, 1989
DATE LOGGED: June 7, 1989

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

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

CONTRACTOR: ATLAS
CASING: Y
CORE STORAGE: JOHNSON CAMP

PURPOSE: TEST OF SAM HORIZON.

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
53.00	-	-52° 0′	ACID	OK		-	-	-	-	-	
114.00	-	-50° 0′	ACID	OK		-	-	-	-	-	
163.40	-	-50° 0′	ACID	OK		-	-	-	-	-	
218.00	-	-48° 0′	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 6.40	OVER BURDEN					
0.00 TO 1.00						
TO 6.40	«OB»					
6.40 TO 31.70	MAFIC PYRO-CLASTICS «MPYRO»	Altered lapilli sized clasts (2cm-8cm) in a dark/light green chloritic matrix. FOLIATION General volcanic breccia texture with super imposed vein breccia textures. Minor vuggy intervals may be due to weathered carbonates.	85	Strong dolomite (pervasive) 50% with silicified intervals increasing towards the base. Lappilli show strong preference towards sericite alteration. 5% qtz stringers. 1-7mm wide crosscut. Bull qtz veining increases towards base 24.3-24.7 qdv with brecciated envelope. 26.5-26.7-qdv breccia.	2-3% fg. diss., py. associated with qtz.-dolomite veins, and vein breccias.	Dark green matrix may be pervasive dark chlorite (fe., mg.).
31.70 TO 59.60	SED BRECCIA «SED.BX»	Black mottled to yellow mottled. fg. Mixed chert and argillite breccia with lesser laminated intervals. Most original fabrics transposed. Sericite increases towards base with a gradational contact into altered cherts/pymut. FOLIATION	55	Strong sericite altered intervals. Variable pyritization in argillaceous intervals. {31.9-35.2} «strong ser» {41.0-42.0} «ser» {47.0-59.6} «ser»	2-7% fg. diss. py. pervasive. Pyritic bands and selveges. {34.3-34.7} «3-4% qn, 20% py, tr. sph»	Trace fuchsite. {47.7-47.9} «flt» {51.5-55.3} «flt» Broken core, brecciated.
59.60 TO 68.90	PYRITIC CHERTS «PY CHT»	Grey with pale yellow and flourescent green whisps Generally a competant siliceous, pyritic unit with a cherty origin grey colour due to abundance of pyrite. QV C.A. at 65.4m	30	Strong intervals of bright green fuchsite and pale yellow sericite 59.6-59.7 20% fuch. 61.8-62.3-20% fuch. 63.0-64.0-10% fuch. {67.7-68.9} 20% fuch., 10% yellow sericite.	5-10% fg. py. local banding parallel to foliation. {64.0-64.2} «7% sph» {64.5-65.} «50% py, tr cpy, gn» {65.2-65.5} «3% cpy, tr. gn, tt»	2-3% prepoliation qtz veining. Note: bright yellow "sericite" commonly associated with fuchsite. Associated with qtz. vein.
68.90 TO 77.40	CHERTS «CHT»	Grey. fg. Variably silicified and brecciated. Laminar fabric does, however exist. Graphitic partings and contorted qtz veins exist. FOLIATION {74.5-77.5} «sed br» Qv at 74.0m CA. Mixed chert/argillite strongly brecciated.	75 35	10-20% pre and post deformation qtz veins.	{70.7-70.9} «2% sph» {71.9-72.1} «tr. cpy» {74.0-74.2} «1% cpy» {74.6-74.7} «2% sph, 2% gn. tr. tt» Banded, fg.	71.9m to 74.9 75% recovery.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
77.40 TO 84.10	PYRITIC MUDDY TUFF «PYMUT»	Grey/brown. Grey pyritic muddy tuff unit. Exellent fabrics. Porphyroblastic qtz. pyrite gives grey/brown colour. FOLIATION	85	Strong pyritization minor (1cm) graphic intervals. {74.8-75.0} 5% fuchsite. 1-2% pervasive dolomitization.	20-30% fg. py.	Similar to other muddy tuff sequences.
84.10 TO 142.10	ARGILLITE AND WACKE «ARG+WCKE»	Black. Interbedded sequences of argillite and fine to coarse grained wackes well foliated with no alteration. FOLIATION {86.3-86.6} «SED BX» 104.6 M BEDDING {106.8-107.9} «WCKE» 108.2 M BEDDING 111.0 M BEDDING {118.6-118.7} «QDV» 123.7 M BEDDING 139.0 M BEDDING	80 45 25 90 85 45	Generally unaltered sequences.	Py. < 1.0% fg. diss. {138.3-138.8} «2% py» Bands, crosscutting. {141.7-142.1} «10% py» Paralell to foliation qtz.-carb stringers.	«86.6m tops down» grading. «87.4m tops down» cross beds. «104.6m tops up» grading. «108.2m tops down» grading.
142.10 TO 175.40	«PYMUT» PYRITIC MUDDY TUFF	Grey, fairly homogenous muddy tuff, weakly laminated with coarser clastic (2mm) particles increasing at base. FOLIATION 147.7M COMP. LAYERING {155.2-155.9} «ARG» {160.3-160.6} «QTZ DOL BX» Qtz dolomit breccia graph. mtx. 160.6-161. graphitic matrix. {166.3-172.4} «30% QDV» {173.7-174.2} «QDV»	70 10	Strong disseminated pyritization, pervasive grey, yellow sericite. Strong wallrock brecciation + silicification.	«10-25% fg. diss. py.» 1-2% qdv. - qds. {170.0-170.3} «1% GN, TT, SPH»	{142.5-146.} «FLT GOUGE» Trace fuchsite.
175.40 TO 178.70	«SED BX»	Black. fg. Mixed chert and argillite breccia minor laminae of mafic tuff. Semi-transposed bedding. FOLIATION POSS. BEDDING {176.3-176.7} «ALT. MT»	85 10	Sericite plus silicification-moderate.	Trace sphalerite. 1-2% diss. py. «4-5% fg. diss. py.»	Qtz. vein at contact. 2-5% fuch.
178.70 TO 218.20	«ALT. MT»	Lt. green to rust brown. A fairly well laminated and competant section of mafic tuff. Siliceous flooding associated with qtz.-dolomite veins has altered the entire section. FOLIATION {195.2-195.4} «QV» C.A.	90 20	Strong pervasive rust brown sericite. Pyritic "clasts" 1-2m possibly stretched bands indicators of pyritization.	«5-15% py» bands, dissemination and clasts. Intervals (10cm) of 60-70% py. {182.4-182.5} «1% gn» in qdv. {186.9-187.1} «TR. GN.» {187.4-188.5} «1-2% SPH» in siliceous interval. Trace gn. {199.8-200.4} «1% GN»	Fuchsite on foliation planes.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB		COMMENTS
BCD20552	32.60	34.10	1.50	.016	.01	.02	1.6	.04																
BCD20553	34.10	34.60	0.50	.208	.11	.54	39.8	.02																
BCD20554	34.60	35.20	0.60	.169	.16	.12	8.3	.06																
BCD20555	38.80	41.50	2.70																					
BCD20556	60.40	62.40	2.00	.011	.02	.02	2.0	.03																
BCD20557	62.40	63.90	1.50	.006	.01	.05	1.9	.26																
BCD20558	63.90	64.60	0.70	.192	3.49	1.51	52.1	.32																
BCD20559	64.60	65.40	0.80	.036	.22	.13	7.7	.17																
BCD20560	65.40	65.70	0.30	2.62	1.48	1.92	84.4	.21																
BCD20561	65.70	67.10	1.40	.013	.06	.03	2.1	.02																
BCD20562	69.00	69.70	0.70	.005	.02	.02	1.9	.02																
BCD20563	69.70	70.00	0.30	.835	.24	.45	219.0	.21																
BCD20565	71.90	73.40	1.50	.092	.18	.16	15.8	.08																
BCD20566	73.40	74.70	1.30	.514	2.02	1.15	87.9	.21																
BCD20571	169.90	170.40	0.50	.043	.06	.23	15.3	.01																
BCD20572	170.40	171.60	1.20	.007	.02	.03	2.7	.02																
BCD20574	195.00	195.50	0.50	.002	.02	.02	1.8	.02																
BCD20575	199.60	200.40	1.00	.006	.13	.22	3.7	.02																

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD20551	16.40	19.40	3.00	39.34	13.61	9.14	9.28	1.91	.88	10.75	.20	1.36	.02		137	97	66		5	41	1.4	662	.14		1.12		127	7
BCD20555	38.80	41.50	2.70	62.38	14.91	.01	4.31	.29	2.95	5.97	.23	.69	.082		11	77	54		5	80	0.3	54	.01		.47		48	1
BCD20564	70.00	71.90	1.90	91.00	3.15	.01	.38	.04	.85	1.88	.02	.16	.70		82	66	144		5	81	.90	144	.01		1.21		175	1
BCD20567	77.90	82.90	5.00	57.08	20.20	.08	.47	.3	4.57	7.13	.01	.86	1.296		45	78	56		130	222	.9	56	.08		6.87		69	9
BCD20568	106.80	107.90	1.10	71.21	11.78	.77	2.05	.33	2.13	5.48	.07	.56	.203		33	96	29		10	171	.41	29	.01		.07		44	1
BCD20569	135.40	137.20	1.80	61.85	21.00	.04	1.54	.75	3.55	5.21	.03	.51	.572		18	95	28		5	377	.9	28	.12		1.32		49	1
BCD20570	148.10	151.10	3.00	55.75	18.68	2.69	2.19	1.33	2.85	7.08	.04	.69	.183		30	49	35		5	213	.5	35	.03		4.93		35	1
BCD20573	178.60	181.30	2.70	46.73	13.25	8.10	5.88	.49	1.75	9.77	.37	1.65	.184		500	100	140		5	128	1.4	140	.27		3.12		188	6
BCD20526	210.30	213.30	3.00	43.62	13.37	11.50	4.86	.82	2.16	7.13	2	1.22	.087		105	40	53		10	59	1.1	53	.07		1.05		109	3

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG251 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: SECTION 105 + 40

PLOTTING COORDS GRID: SAM
NORTH: 1196.00N
EAST: 10540.00W
ELEV:

ALTERNATE COORDS GRID: SAM
NORTH: 11+96N
EAST: 105+40W
ELEV: 0.00

COLLAR DIP: -85° 0' 0"
LENGTH OF THE HOLE: 431.30m
START DEPTH: 0.00m
FINAL DEPTH: 431.30m

COLLAR GRID AZIMUTH: ~~225° 0' 0"~~ 140°

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

DATE STARTED: June 4, 1989
DATE COMPLETED: June 8, 1989
DATE LOGGED: June 11, 1989

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

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

CONTRACTOR: ATLAS
CASING: L.I.H.
CORE STORAGE: JOHNSON CAMP

PURPOSE: INTERSECTION OF SULPHIDE ZONE SEEN IN RG250. THISINTERSECTION PLANNED FOR A 150m DOWN DIP INTER-

DIRECTIONAL DATA: SECTION OF RG250 ZONE WITH CONTINUATION INTO BASALMAFIC SEQUENCE.

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
6.70	-	-85° 0'	ACID	OK		-	-	-	-	-	
53.60	-	-84° 0'	ACID	OK		-	-	-	-	-	
125.30	-	-83° 0'	ACID	OK		-	-	-	-	-	
164.00	-	0° 0'	ACID		failed	-	-	-	-	-	
282.20	-	-77° 0'	ACID	OK		-	-	-	-	-	
345.60	-	-76° 0'	ACID	OK		-	-	-	-	-	
385.30	-	-71° 0'	ACID	OK		-	-	-	-	-	
424.90	-	-73° 0'	ACID	OK		-	-	-	-	-	
213.40	211° 0'	-77° 0'	TRO-PARI	OK		-	-	-	-	-	
431.30	218° 0'	-73° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 6.70	OVER BURDEN «OB»					
6.70 TO 105.50	MAFIC TUFF «MT»	Lt. to dark green. fg. Variably altered and laminated tuffaceous sequence. Chlorite rich matrix. Zones of possible lapilli clasts, acthough carbonate and sericite alteration is moderate to strong and may obscure original fabrics.		Generally 15-25% qtz. dolomite stringers and veins. Dark green chlorite and yellow/brown sericite intervals common adjacent to large veins. 11.8-30.0 - 25% sericite.	2-3% fg. py. in matrix and as selvege next to qdv-qds. {58.8-58.9} «1% GN» {62.8-62.9} «GN, TT=1%» {82.9-83.4} «TR GN, SPH» in vein bx.	This unit may be a mafic flow or at least partially. Transitional contact.
		FOLIATION	35	51.7-58.9 - 30% qds., 25% chl.		
	60.9m	QDV	80	64.6-67.1 - 10% sericite.		
	76.2m	BEDDING	45			
	96.0m	QDV	45			
		Brecciation zones adjacent to larger veins is common.				
		90.4-105.5 - 40% qtz. dol. bx. and veins.		10% yellow sericite.	2-5% fg. py bands. {105.1-105.2}«TR.GN»	
105.50 TO 283.10	MAFIC PYRO-CLASTICS «MPYRO»	Green. fg. to mg. Excellent lappilli tuff lithology with relatively little crosscutting qtz. carb stringers (compared to last interval). Porphyritic or porphyro blastic matrix and fragments at top of sequence. Fragment size range from 2-6cm. Very chloritic matrix.		Preferential sericitization of lapilli clasts. {105.5-116.6} «SER» 223.1-283.1, 10-15% qtz.-carb stringers and veins.	1-2% mg py. {114.0-114.1} «1-2% CPY, GN» associated with qds. {211.5-211.6} «1% GN» {221.9-222.1} «TR GN» {233.1-233.3} «1% GN» {234.7-235.8} «TR GN» {236.9-237.1} «1-2% GN, 2% SPH»	Relatively homogenous unit.
		FOLIATION	45			
283.10 TO 309.10	«SER ARG» SERICITIC ARGILLITE	Pale green. fg. Sericitic argillites with minor fine laminations of white chert. Shor intervals of graphitic sediments and interbedded mafic tuffs		Strong (>60%) sericite pervasive in foliation 15% qv, qs.	2-3% fg. diss. py.	{288.2-288.3} «FLT GDG.» {301.7-302.9} «FLT GOUGE»
	288.3m	FOLIATION	15			
		288.3-288.4 - qv - crosscuts foliation.				
	288.4m	QV	45			
		{293.4-293.8} «BLK. ARG.» {298.9-298.3} «BLK. ARG.»				{301.6-302.9} «FLT GOUGE»
309.10 TO 326.10	«MIXED CHT AND ARG»	Black. fg. Dominantly chert and argillite with graphitic partings. Brecciated intervals with semi-transposed bedding.		Strong graphitic parting. Minor pale green sericite 15% crosscutting qtz.-dol. veins.	{309.1-309.3} «Tr. SPH.»	{310.6-310.8} «FLT GOUGE»
		FOLIATION	40			
		{319.8-322.1} «SIL FLOOD»		Siliceous flooding.	{320.4-320.6} «3% SPE, 1% GN»	
326.10 TO 342.80	«ALT. MT.» ALTERED MAFIC TUFF	Grey/green. fg. to mg. Silicified and modestly sericitized mafic tuff. Very competant unit.		Strong dolomite intervals. Rust colour sericite in whisps (is this hematic?).	2-5% mg. diss. py.	
		FOLIATION	50			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
342.80 TO 361.00	«ALT. MPYRO»	Grey to brown. fg. Variably altered mafic lapilli tuff. Remanent breccia clasts (2-4cm) in a qtz.-carb altered matrix.	55	Srtong brown dolomitic/silica vein envelopes approximately 20% of interval crosscut by qdv + qds.	Sulphides generaly associated with qtz. carbonate veins. {343.1-343.6} «Tr. GN» with qv. {348.7-349.4} «Tr. GN» with qdv.	
361.00 TO 431.00	«MPYRO» MAFIC PYRO-CLASTICS	Green. fg. Sericitized lapilli clasts in a green chloritic matrix. Open matrix, partially sorted.	55	Moderate pervasive sericite. {415.7-431.0} «50% QDS» Minor brownish alt. assoc. with qtz. dol. stringers.	2-7% py. dissem.	Possible equivalent to top of hole. Certainly same style of breccia.
		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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD20531	82.80	83.10	0.30	.004	.42	.61	4.5	.02															
BCD20536	233.10	233.40	0.30	.082	2.39	2.61	10.3	.01															
BCD20547	236.80	237.30	0.50	.073	5.82	3.52	14.3	.15															
BCD20539	309.20	309.60	0.40	.031	.34	.24	5.9	.02															
BCD20540	320.30	320.90	0.60	.008	1.36	1.09	10.6	.02															
BCD20542	342.90	343.40	0.50	.073	5.82	3.52	14.3	.15															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD20528	18.00	21.00	3.00	39.47	13.67	9.91	6.54	.14	3.28	9.57	.17	1.33	.73		114	86	68		590	64	1.2	68	.14		3.37		101	1
BCD20529	45.50	48.60	3.10	43.84	15.33	4.36	9.93	3.38	.07	10.16	.16	1.50	.008		822	102	83		20	11	1.0	83	.19		.78		71	121
BCD20530	69.00	72.00	3.00	39.18	12.82	8.59	10.82	.52	1.46	9.51	.27	1.53	.058		71	121	91		45	57	1.5	91	.27		1.51		83	1
BCD20532	109.00	111.70	2.70	37.80	12.30	8.76	10.52	1.65	.23	10.60	.18	1.50	.017		76	109	915		5	41	1.5	91	.17		.43		72	1
BCD20533	144.20	147.20	3.00	41.73	13.92	6.97	10.83	2.09	.01	11.51	.20	1.30	.005		76	160	88		15	23	1.4	88	.15		.48		1	1
BCD20534	171.70	174.70	3.00	39.90	13.71	5.65	13.51	1.23	.01	12.97	.28	1.34	.015		140	958	400		5	24	1.6	400	.20		3.75		29	2
BCD20535	205.00	208.00	3.00	40.47	13.57	7.84	12.00	1.81	.01	10.90	.24	1.25	.006		84	128	90		10	33	3.2	90	.13		.5		1	2
BCD20537	238.40	241.40	3.00	33.10	11.08	18.03	8.80	2.02	.01	8.82	.17	.88	.01		77	202	96		5	43	1.9	96	.11		.66		23	1
BCD20538	283.70	286.60	2.90	57.28	14.84	1.29	4.71	.14	3.51	8.39	.44	.62	.073		18	107	73		5	81	.6	73	.01		3.45		92	1
BCD20541	338.20	341.20	3.00	40.55	13.59	6.50	9.48	.34	1.55	9.83	.22	1.61	.048		49	131	73		10	76	.9	85	.24		1.20		125	1
BCD20543	362.70	365.70	3.00	42.22	12.49	4.93	13.63	.37	.09	9.93	.26	1.47	.007		70	135	109		5	28	1.2	105	.24		.41		34	2
BCD20544	388.30	391.30	3.00	38.55	13.29	9.11	11.72	1.00	.01	11.09	.22	1.64	.005		91	190	114		5	20	1.6	114	.25		.45		20	1
BCD20545	423.30	426.30	3.00	39.54	13.45	8.96	10.66	2.42	.01	10.28	.15	1.75	.073		69	94	76		5	555	1.5	76	.24		.02		1	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG262 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: SAM GRID 103+00

PLOTTING COORDS GRID: SAM
NORTH: 875.00N
EAST: 10295.00W
ELEV: 1239.67

ALTERNATE COORDS GRID:
NORTH: 8+75N
EAST: 102+95W
ELEV: 1239.67

COLLAR DIP: -60° 0' 0"
LENGTH OF THE HOLE: 86.90m
START DEPTH: 0.00m
FINAL DEPTH: 86.90m

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

DATE STARTED: June 9, 1989
DATE COMPLETED: June 11, 1989
DATE LOGGED: June 14, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: JOHNSON CAMP

PURPOSE: BARITE HORIZON INTERSECTION.

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
68.90	-	-59° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 12.80	OVER BURDEN «OB»					
12.80 TO 29.70	MIXED CHERT AND ARGILLITE «CHT + ARG»	Black to pale green. fg. Dominantly black graphitic cherts and argillites. Intervals of strong pervasive sericite alteration (sc tff) and local tectonic brecciation and transposition {28.2-29.3} qv.	90	{14.0-21.5} «SER CHT + ARG» minor graphitic intervals.	2-5% diss. py. and in bands parallell to foliation.	Transition into strongly dolomitized and fuchsite rich interval at base.
29.70 TO 38.40	«SIL CHT»	Silicified grey cherts 30% post deposition qtz. veins. Top of unit strongly dolomized with 10% fuchsite.	90	Strong pervasive silicification.	2-7% fg. py. {32.5-32.6} «MSPY» Massive pyrite bands.	Absence of barite horizon at base of the unit.
38.40 TO 48.10	«PYNUT» PYRITIC MUDDY TUFF	Grey to dark brown. fg. to mg. Typical, homogenous pyritic muddy tuff minor intervals of graphitic laminae. Apparent prefoliation qtz.-carb. veining (now stretched and broken.) Minor clastic (<3mm) textures. FOLIATION	87	Strong pyritization.	10-30% fg. diss. py.	Transitional and interbedded contact with lower sedments.
48.10 TO 86.90	«ARG+WCKE»	Black. fg. to mg. Typical strongly folded graphitic sediments lesser mg. wacke. interbeds. Well lineated. FOLIATION 65.4M FOLIATION BEDDING {73.2-74.0} «SED BX» {80.4-80.5} «PLT GDG» END OF HOLE.	 75 45 45	None.	1-2% cg. py. biogenic.	Moderate rotations in foliation. Fold axis at 65.4m. Poor core 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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD20549	30.90	31.90	1.00	.001	.01	.01	2.1	.06															
BCD22452	40.40	40.90	0.50	.004	.19	.20	4.2	.018															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD20548	14.50	17.60	3.10	63.16	16.28	.01	3.58	.61	3.17	6.16	.36	.64	.085		34	78	69			72	.5	69	.01		.03		28	3
BCD20550	36.90	38.40	1.50	76.57	10.13	.01	1.25	.19	2.66	4.03	.06	.46	.215		35	67	38			176	.36	38	.01		1.62		112	1
BCD20451	38.40	39.60	1.20	56.56	16.69	.10	.61	.26	3.96	8.79	.01	1.24	.510		600	2077	876			151	12.9	876	.12		9.50		285	321

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG263 | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 109+00 SECTION

PLOTTING COORDS GRID: SAM
NORTH: 962.00N
EAST: 10858.00W
ELEV: 1098.26

ALTERNATE COORDS GRID: SAM
NORTH: 9+62N
EAST: 108+58W
ELEV: 1098.26

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 102.10m
START DEPTH: 0.00m
FINAL DEPTH: 102.10m

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

DATE STARTED: June 20, 1989
DATE COMPLETED: June 22, 1989
DATE LOGGED: June 30, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EXPLN. CAMP.

PURPOSE: TEST OF ZINC SOIL GEOCHEM ANOMOLY.

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
41.50	-	-52° 0'	ACID	OK		-	-	-	-	-	
60.90	-	-54° 0'	ACID	OK		-	-	-	-	-	
102.10	-	-53° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 14.30	«CASING»					
14.30 TO 70.20	«FLT'D SEDS» FAULTED SEDIMENTS	Grey to black. Fine grained. Intensely faulted and broken core. Mainly argillite, muddy tuff and chert, 30% qtz. veins with 30% of interval intense gouge.		Strong sericite in clay gouge.	«14.3-16.0» «mssx fragments» in broken core.	Abundance of massive sulphide pieces in core.
		{14.3-32.3} «mut. mssx chips» broken and ground chips of muddy tuff and massive sulphides.			«60% py. tr. gn., cpy.»	10% recovery.
		{32.3-42.9} «flt. qv., mut.»			«tt in qv.»	30% recovery.
		{43.9-50.6} «60% qv., 40% ser. arg.»				
		{50.6-65.2} «mut.» variably pyritic broken and gouged.		Strong 40% grey sericite, plus dolomitization.	«20%-40% py.»	30% recovery.
		{65.2-67.9} «gouged ser. arg.» strongly faulted & gouged.			2-5% fine grained py. in clay gouge.	52% recovery.
		{67.9-70.2} «flt. bx.» rehealed, 60% qv. anc. fragments.			Sulphide rich matrix.	
70.20 TO 102.10	«ALT MT»	Green to grey. Fine grained. Moderate to intense altered mafic tuff sequence. Weak relict banding apparent.		Pervasive qtz.-dolomite alteration increases towards base. Possible silica flooding at top minor crosscutting chlorite (dark green) and traces of fuchsite.	«2-5% py. med. grained diss.»	
		FOLIATION	85			
		At 77.2m BEDDING	45			
		{72.4-73.0} «cht.» cherty zone.		Possible silica flooding or primary chert horizon.	«5-10% py. med. grained» trace fuchsite	
		CONTACT	30	Weakly sericitized clasts, minor qtz.-dol. veins.		
		{92.7-102.1} «mpyro» flattened lappilli.				
		END OF HOLE.				

HOLE NUMBER: RG263

GEOCHEM.

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %
BCD20603	76.50	79.50	3.00	42.8	14.65	7.01	8.66	1.35	.86	9.27	.2	1.83
BCD20604	97.80	100.80	3.00	41.46	13.71	6.14	10.16	1.98	.06	11.20	.23	1.79

HOLE NUMBER: RG263

GEOCHEM. SHEET

ASSAY SHEET

HOLE NUMBER: RG263

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG G/T	AU G/T	SB %	AS %	CU PPM	ZN PPM	PB PPM	S.G.	AG OZ/T	O
BCD20605	14.30	20.10	5.80	.024	.08	.03	2.2	.04								
BCD20606	57.20	58.70	1.50	.004	.01	.02	1.5	.08								
BCD20601	67.90	70.20	2.30	.016	.02	.13	2.4	.14								
BCD20602	71.30	72.40	1.10	.012	.09	.1	2.3	.03								

ASSAY SHEET

---- WWWPP. RG263

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG264 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 107+20 SECTION

PLOTTING COORDS GRID: SAM GRID
NORTH: 855.00N
EAST: 10718.00W
ELEV: 1099.35

ALTERNATE COORDS GRID: SAM GRID
NORTH: 8+50N
EAST: 107+20W
ELEV: 1099.35

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 151.20m
START DEPTH: 0.00m
FINAL DEPTH: 151.20m

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

DATE STARTED: June 22, 1989
DATE COMPLETED: June 24, 1989
DATE LOGGED: July 1, 1989

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

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

CONTRACTOR: ATLAS
CASING: REMOVED
CORE STORAGE: SAM EX. CAMP.

PURPOSE: STRATIGRAPHIC HOLE (FIRST OF FENCE) ON 107+20 SECTION.

DIRECTIONAL DATA: UTM'S 2800.53mE 7099C.78mN

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
39.00	-	-49° 0'	ACID	OK		-	-	-	-	-	
110.00	-	-48° 0'	ACID	OK		-	-	-	-	-	
145.00	256° 0'	-42° 0'	TRO-PARI		NOT RELIABLE	-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 15.80	«CASING»					
15.80 TO 87.10	«SER ARG + CHT»	Yellow to black. Fine grained. Weak to strongly sericitized argillite and lesser chert primary fabric transposed by later shearing. Folding apparent in sericitic intervals. Weak brecciation also noted. Alteration contacts defined and parallell foliation planes. Weak laminar fabric exists		Variable sericite alteration opposed with graphitic sediments strong chloritic alteration at base of unit.	5-7% fine grained. diss. py. and py bands-pervasive. {22.7-23.1} «2% gn., trtt» assoc. with early qv.	Note folded qtz. veinlets (>2cm) throughout this unit. Qtz. vein at contact.
		FOLIATION	85			
		{46.6-48.1} «bull qdv.»		Sericitic alteration increases at envelope.		
		{53.9-60.2} «fold axis»				
		{62.5-63.5} «bull qdv.»				
		{71.0-71.5} «bull qdv.»				
		{84.5-86.9} «strg. chl. alt.»				
87.10 TO 151.20	«MT» MAFIC TUFFS	Green. Fine grained. A competant series of fine, laminated, ash tuffs. Strongly altered and recrystalized near bull qtz.-dol. veins.		Strong dolomite alteration near qdv.	2-3% fine grained py. diss. Pyritic clasts and flasers in discrete intervals.	
		FOLIATION	90			
		{87.1-95.5} «30% bull qdv.»		1% fuchsite.		
		{102.7-103.8}			«10% fine grained py. bands.»	
		{104.7-106.3} «bull qdv.»				
		{129.4-132.7} «mdyke?» coarse phenos or fine clastic appearance. Rounded 2-3cm clasts of mt.				
		{138.3-146.8} «35% qdv.»		trace fuchsite.		
					{147.1-147.2} «tr. gn. in qv.»	
		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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD20608	22.60	23.10	0.50	.001	.01	.24	4.2	.02															
BCD20610	102.70	104.20	1.50	.014	1.9	.08	1.9	.63															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD20607	19.00	22.00	3.00	64.44	12.31	1.27	2.87	.34	2.94	6.56	.43	.57	.09		13	629	170		15	92	1.0	170	.01		.63		81	
BCD20609	81.80	84.60	2.80	60.18	14.83	.22	2.75	.28	3.89	7.60	.33	.69	.205		43	81	59		70	202	.4	59	.01		1.59		103	
BCD20611	123.10	126.10	3.00	40.90	13.02	9.98	7.59	.02	2.22	7.61	.27	1.61	.270		781	111	76		35	240	1.1	76	.30		1.26		195	
BCD20612	148.10	150.90	2.80	38.00	12.83	10.11	7.75	.07	2.14	9.61	.25	1.67	.390		70	142	96		20	332	1.2	96	.30		1.53		38	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG265 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 107+20 SECTION

PLOTTING COORDS GRID: SAM GRID
NORTH: 803.00N
EAST: 10712.00W
ELEV: 1098.25

ALTERNATE COORDS GRID: SAM GRID
NORTH: 8+ 3N
EAST: 107+12W
ELEV: 1059.89

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 148.10m
START DEPTH: 0.00m
FINAL DEPTH: 148.10m

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

DATE STARTED: June 25, 1989
DATE COMPLETED: June 28, 1989
DATE LOGGED: July 2, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: STRATIGRAPHIC FENCE TO REA ZONE ON SECTION 107+20mW.

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
77.40	-	-50° 0'	ACID	OK		-	-	-	-	-	
109.40	-	-50° 0'	ACID	OK		-	-	-	-	-	
148.10	-	-51° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG265 DATE: 9-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 17.10	«CASING»					
17.10 TO 27.70	«CHT + SER ARG»	Black to yellow. Fine grained. Silicified cherts and sericitic argillites. Graphitic partings persist in cherts. 40% crosscutting qv. FOLIATION	90	Silica flooding and pervasive sericite define partings in laminated intervals.	{18.1-18.2} «60% py.» in clast. {26.8-26.9} «30% py. diss.»	Qtz. vein at contact with basal mafic tuff.
27.70 TO 39.10	«MT» MAFIC TUFFS	Lt. green. Fine grained. Silicified, brecciated mafic tuff sequences primary fabric obliterated. Brecciation, denoted by angular fragments, increases towards the base of the unit. {27.8-28.6} «bull qv.» {32.5-40.2} «mt. bx.» first order bx. FOLIATION	90	Pervasive rust brown ankerite/sercite.	{30.8-30.9} «5% fine grained diss. py.»	Brecciation crosses lithological boundary contact paralells foliation.
39.10 TO 53.40	«CHT + ARG + MT»	Black and green. Fine grained. Strongly brecciated, interbedded sequences of cherty argillite & green ash tuffs. FOLIATION {39.1-39.7} «cht.+arg. bx.» first order bx. 60% qdv. clasts. {39.7-40.3} «mt. bx.» {40.3-47.4} «cht.+arg bx.» minor mt. lam. 42.7-43.5 second order bx. {47.4-51.5} «mt» clasts of seds. {51.5-53.4} «cht.+arg. bx.» first order.	90	Strong graphitic partings. Chloritic partings in tuffaceous sequences.	1-2% py. pervasive fine grained.	
53.40 TO 142.50	«MT»	Lt. green. Fine grained. Variably altered and brecciated mafic tuffs. Laminar fabric exists away from breccia zones. A competant unit with excellent recovery. Pervasive qtz.-dol. alt'n. FOLIATION	90	Pervasive qtz.-dol. alteration consisting of veins and stringers crosscutting foliation minor brown sericite.	1-2% fine grained py. diss.	
142.50 TO 144.30	«CHT + ARG BX»	Black. Dominantly chert and qtz. clasts in a black graphitic matrix. First order bx.		Trace fuchsite in qv. selvage.	1-2% py. clasts.	
144.30 TO 148.10	«ALT MT»	Altered mafic tuffs. END OF HOLE.		Pervasive rust colour sericite.		

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG266 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: SECTION 107+20W

PLOTTING COORDS GRID: SAM
NORTH: 648.00N
EAST: 10712.00W
ELEV: 1087.13

ALTERNATE COORDS GRID:
NORTH: 6+48N
EAST: 107+10W
ELEV: 1087.13

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 152.70m
START DEPTH: 0.00m
FINAL DEPTH: 152.70m

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

DATE STARTED: June 28, 1989
DATE COMPLETED: June 30, 1989
DATE LOGGED: July 5, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP.

PURPOSE: THIRD OF A SERIES OF STRATIGRAPHIC HOLES ALONG SECTION 107+20W. UTM 70800.93N 2648.21W

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
99.40	-	-54° 0'	ACID	OK		-	-	-	-	-	
133.50	-	-53° 0'	ACID	OK		-	-	-	-	-	
149.70	230° 0'	-55° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG266 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 18.30	«CASING»					
18.30 TO 41.10	CHERT AND ARGILLITE «CHT + ARG»	Grey to black and yellow. Fine grained. Variably altered and silicified chert with lesser argillite interbeds broken core and poor recovery. Folded chert laminae argillites tend to be strongly brecciated while cherts are folded. FOLIATION	45	Sericitization is wear to moderate and discontinuous.	{32.3-33.5} «assx pieces-60% gn, 5% sph 2% cpy, 10% py» note lost core. {33.5-33.7} «assx pieces, 80% py, 5% cpy, tr gn, sph» Broken core, poor recovery. {38.6-39.0} «assx pieces, 90% py, 1-2% cpy»	{18.3-20.1} «rubble» {20.1-23.2} «15% recovery» {23.2-26.2} «15% recovery» {26.2-29.3} «15% recovery» {29.3-32.3} «15% recovery» {32.3-33.3} «15% recovery» {33.5-35.4} «30% recovery» {35.4-38.4} «10% recov'd» {38.4-41.1} «30% recov'd»
41.10 TO 43.20	«MSSX» MASSIVE SULPHIDES	Yellow and grey metallic. Med. grained. Meduim grained, probably recrystallized sulphides. Weakly banded paralell to foliation. Qtz. rich gangue. Weak zoning of lead and copper phases, generally towards the base. FOLIATION	90	Probably recrystallized.	«75% py, 10% gn, 5% sph, 5% cpy»	Note simularity in texture and grade to RG 85, however absent is the muddy tuff
43.20 TO 65.80	«SER CHT + ARG»	Yellow to grey. Strongly altered sericite/chert unit. Minor intervals bear strong resemblance to the muddy tuff, however less pyrite and more silica prevail. Minor graphitic intervals. FOLIATION	85	Strong pervasive sericite alteration.	«5-15% diss. py» Crosscutting pyritic stringers (1-2)mm) possible stockwork.	
65.80 TO 75.90	«CHT + ARG»	Chert and lesser interbedded argillite graphitic.		At least partially silicified argillite	«1-2% py»	
75.90 TO 112.50	«SED BX»	Black. Fine grained. Intense fault breccia comprised of sheared argillite and mafic tuff fragments. {99.4-112.4} «sanded flt. gdg.»				
112.50 TO 152.70	«MT»	Green. Fine grained. Laminated mafic tuff sequence. Variably brecciated. {123.1-123.7} bx. {146.6-150.2} bx. {150.2-150.7} «arg bx» SHEAR PLANE END OF HOLE.	20	Strong crosscutting qtz-carb. stringer.	1-2% fine grained 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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD20505	32.30	32.50	0.20	1.42	2.14	4.01	65.4	.20															
BCD20506	33.50	34.10	0.60	.702	1.84	1.84	54.1	.14															
BCD20501	41.10	42.10	1.00	1.73	3.22	2.98	96.8	.23															
BCD20502	42.10	43.20	1.10	2.04	3.08	4.21	110.4	.37															
BCD20507	43.20	44.50	1.30	.053	.76	.26	5.2	.15															
BCD20508	44.50	47.00	2.50	.001	.01	.01	.5	.01															
BCD20509	53.30	55.00	1.70	.001	.01	.01	.4	.01															
BCD20510	55.00	55.40	0.40	.009	.02	.01	.3	.01															
BCD20513	120.70	122.20	1.50	.002	.02	.01	.02	.001															
BCD20514	122.20	123.10	0.90	.06	3.34	.61	19.9	.58															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD20511	55.80	57.30	1.50	66.75	14.29	.01	2.15	.28	3.36	6.76	.31	.62	.09		29	234	123		5		.2	123	.01				122	1
BCD20512	119.20	120.70	1.50	23.88	15.34	5.39	17.30	.01	.05	18.69	.41	1.42	.005		355	9950	1488		5		4.8	1488	.29				7	10
BCD20515	141.80	144.80	3.00	37.50	11.76	15.81	7.16	2.00	.04	10.01	.14	1.23	.005		89	153	76		5		1.2	76	.15				10	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG267 | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: SAM GRID 107+20

PLOTTING COORDS GRID:
NORTH: 648.00N
EAST: 10710.00W
ELEV: 1087.15

ALTERNATE COORDS GRID:
NORTH: 6+48N
EAST: 107+10W
ELEV: 1087.15

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 49.10m
START DEPTH: 0.00m
FINAL DEPTH: 49.10m

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

DATE STARTED: July 1, 1989
DATE COMPLETED: July 5, 1989
DATE LOGGED: July 13, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP.

PURPOSE: -90 OFF SAME PAD AS RG266 FOR A 30 METER DOWN DIP.INTERSECTION OF MSSX. VERY BAD, FAULTED GROUND.

DIRECTIONAL DATA: HOLE ABANDONED AT 49.1 WITH LOSS OF CASING AND RODS. UTM 70795.25N 2643.51W

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
14.00	-	-87° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG267 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 10.00	«CASING»					
10.00 TO 14.00	«ARG» ARGILLITE	Black. Fine grained. Strongly silicified black, graphitic argillite 20-40% qtz. veins and stringers. Very broken and fractured core with poor recovery.		Strong silicification by qtz. stringers	10-15% py. in bands parallel to foliation.	25% recovery.
14.00 TO 32.30	«SER ARG + CHT»	Yellow to pale grey. Very poor recovery. Remanent graphitic intervals in generally a highly sericitized unit. Pressure sol'n features abundant throughout this highly folded sequence. {31.5-32.3} «flt. gdg.» SHEARING AT 31.5m FOLIATION	45 35	Strong sericite alteration.	1-2% py. diss.	40% recovery.
32.30 TO 49.10	«DOL SST»	Grey to light green. Med. grained. Healed breccia unit with sharp, angular, brecciated clasts in a medium grained semi feldspar porphyritic (clastic) matrix. Dry surface is pale grey to green, wet surface is dk. brown to grey. Graphitic whisps are common throughout the section. Relict bedd or compositional layering is evident, no sign of chlorite. END OF HOLE.		Pervasive rust colour sericite in bands and whisps. 5-10% crosscutting qtz. veins and stringers. Pervasive dolomite alteration.	2-7% fine grained py. in breccia matrix	A very competant unit. Possibly a mafic tuff/arg. mixed breccia or a sand stone. Hole abandoned due to binding of rods and casing.

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
	0.00	0.00	0.00																				

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD20516	14.00	18.60	4.60	65.62	10.44	.99	4.42	.26	2.42	5.90	.37	.54			58	176	121		5	66	.2		.01					
BCD20517	41.50	44.50	3.00	31.53	11.63	13.63	9.13	.74	1.12	9.41	.27	1.11			102	111	83		5	55	1.1		.14					

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG268 | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 107+20 SECTION

PLOTTING COORDS GRID: SAM
NORTH: 660.00N
EAST: 10712.00W
ELEV: 1087.19

ALTERNATE COORDS GRID:
NORTH: 6+60N
EAST: 107+12W
ELEV: 1087.00

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 200.20m
START DEPTH: 0.00m
FINAL DEPTH: 200.20m

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

DATE STARTED: July 5, 1989
DATE COMPLETED: July 8, 1989
DATE LOGGED: July 15, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP.

PURPOSE:

DIRECTIONAL DATA: UTM 70800.94N 2648.28E

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
16.80	-	-88° 0'	ACID	OK		-	-	-	-	-	
44.50	-	-89° 0'	ACID	OK		-	-	-	-	-	
80.20	-	-88° 0'	ACID	OK		-	-	-	-	-	
113.40	-	-84° 0'	ACID	OK		-	-	-	-	-	
182.90	-	-84° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 16.70	«CASING»					
16.70 TO 20.10	«CHT + ARG»	Black. Fine grained. Black graphitic argillites and cherts, 5% qdv. veins. Minor fold hinges observed. Very broken core. FOLIATION	65	Minor sericite intervals.	2-5% py. clasts and disseminations.	45% recovery.
20.10 TO 30.70	«SER ARG + CHT»	Pale yellow and grey. Fine grained. Almost muddy tuff in appearance with minor graphitic intervals. Broken core.		Strong sericite alteration.	10% pyritic stringers crosscut.	
30.70 TO 51.80	«DOL SST»	Pale grey. Med. grained. A competant dolomitized unit with minor bedding structures and graphitic whisps. Dolomitic sandstone? 10% crosscutting dolomite veins. FOLIATION	25	Pervasive rust colour sericite.	1-2% fine grained py.	Good recovery not broken.
51.80 TO 100.70	«SED BX»	Black. Fine grained. Intensely brecciated arg. with lesser cherts. 5% late bull qdv. FOLIATION	45	Minor sericitic intervals. Also intervals of strong qtz.-carb. stringers. (pre-shearing)	1-5% fine grained diss. py. in bands and stringers.	
100.70 TO 140.90	«DOL SST BX»	Grey. Fine grained. 30% rust colour sericite strongly brecciated intervals. Trace fuchsite. Minor sed. bx. intervals. Possibly an altered mafic tuff. SHEARING	45	Strong (25%) pervasive dolomite.	{101.9-101.3} «1% cpy. 1% gn.» in qdv.	{102.7-130.0} «flt gdge» Very competant unit.
140.90 TO 175.60	«SED BX»	Black. Strongly brecciated and contorted heterolithic sed. breccia. Mainly argillite and qtz. veins frags with minor wacke clasts.		Pre shearing silicification.		
175.60 TO 200.20	«DOL SST BX»	Grey. Med. grained. Possibly an altered mafic/ interned. x stall tuff 25% rust coloured sericite minor sed. bx. intervals. END OF HOLE.		Strong pervasive dolomite.		Very competant.

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD20518	41.00	43.90	2.90	36.82	9.65	11.59	10.15	.3	.56	9.84	.22	1.14	.16	99	116	81	.8	5	98	1	52	.02	80.98					
BCD20520	62.80	65.80	3.00	44.96	8.3	12.02	6.67	.4	1.18	7.56	.34	.70	1.25	39	161	248	1.1	10	87	3	122	.05	85.07					
BCD20519	125.20	128.20	3.00	32.45	8.27	15.04	7.48	.96	.78	9.3	.6	.85	.01	62	115	225	1.0	5	251	12	181	.065	82.90					
BCD20521	178.10	180.90	2.80	32.29	10.79	13.91	7.70	1.11	1.04	9.07	.22	1.05	.10	83	80	80	1.0	5	92	3	61	.065	77.77					
BCD20522	197.30	200.20	2.90	36.23	10.97	12.97	8.21	.81	.76	9.01	.23	1.20	.07	86	97	87	1.0	5	138	2	58	.05	81.09					

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG269 | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 106+80 SECTION

PLOTTING COORDS GRID: SAM
NORTH: 674.00N
EAST: 10675.00W
ELEV: 1099.77

ALTERNATE COORDS GRID:
NORTH: 6+74N
EAST: 106+75W
ELEV: 1099.77

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 163.40m
START DEPTH: 0.00m
FINAL DEPTH: 163.40m

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

DATE STARTED: July 9, 1989
DATE COMPLETED: July 11, 1989
DATE LOGGED: July 17, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP.

PURPOSE: TO INTERSECT SULPHIDE ZONE SEEN IN RG266 ON A 40m STEP OUT (20m N STEPBACK). 70784.64 N 2684.63 W

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	-	0° 0'	ACID			-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG269 DATE: 8-November-1985

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 30.50	«CASING»					
30.50 TO 31.00	«RUBBLE»	Qtz. vein and mpyro fragments.				
31.00 TO 32.30	«ARG»	Black. Fine grained. Moderately silicified.				25% recovery.
32.30 TO 44.50	«SER CHT + ARG»	Pale green/yellow. Fine grained. Well laminated and folded. Strongly altered with minor graphitic horizons. FOLIATION	90	«60-70% sericite» pervasive. Black chlorite/pyrite stringers appear to crosscut at 43.0m.	5-10% fine grained diss. py. Also grano-porphyro blastic pyrite.	
44.50 TO 47.20	«CHT + ARG»	Black. Fine grained. Poorly laminated, weak brecciation.		Very minor pale green sericite.		{44.6-44.7} «flt. gdg.» 25% recovery.
47.20 TO 47.50	«SMSI»	Metallic yellow. Med. grained. Network sulphides in a siliceous/cherty matrix probably recrystallized.			55% sx., 45% silica with «80% py., 2-3% cpy., 1% gn., tr. sph.»	
47.50 TO 49.90	«MSSI»	Metallic yellow/grey. Med. grained. Massive sulphides in a cherty matrix. Weak banding is apparent although no orientation is obvious. Zonation is not present.			85% sx., 15% silica with «65% py., 15% gn., 5% cpy., 5% sph.»	«30% recovery» Abrupt basal contact.
49.90 TO 96.40	«SER CHT + ARG»	Pale yellow/grey. Fine grained. Moderate to strongly altered sericitic argillite and cherts. Intervals of black, graphitic argillite and cherts {54.0-54.5} «cht + arg» {62.0-66.9} «cht + arg» {76.1-77.6} «cht + arg» {88.9-90.0} «cht + arg» FOLIATION	90	30-60% pervasive sericite.	1-5% fine grained to med. grained diss. py.	{71.9-72.8} «flt. gdg.» Transitional basal contact. Broken core throughout.
96.40 TO 142.60	«SED BX»	Black with green intervals. Fine grained. Typical sedimentary tectonic breccia, with chert and argillite fragments. Minor laminated intervals and mafic tuff intervals. 15% qtz.-dol. veins/stringers. {116.4-119.0} «alt mt» FOLIATION	80	Strong tectonic overprint.	5-15% banded fine grained py.	{107.6-107.8} «flt gdg.» {107.9-108.0} «10% fuchsite»

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		SHEAR	45			
142.60 TO 163.40	«ALT MT»	Altered mafic tuffs. Strongly foliated. Minor argillite intervals. Possible relict lappilli. FOLIATION	85	Moderate (10-20%) sericite alteration.	Up to 20% fine grained py. in bands parallel to foliation.	Transitional contact.
		END OF HOLE.				

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZK %	PB %	AG G/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZK PPM	PB PPM	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SE PPM	AG PPM	AU PPB	COMMENTS
BCD20503	47.20	47.60	0.40	.120	3.21	.99	11.5	.34															
BCD20504	47.60	49.90	2.30	2.23	4.65	4.52	194.0	.41															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD20523	40.80	43.00	2.20																									
BCD20524	84.00	87.00	3.00																									
BCD20525	160.30	163.30	3.00	37.94	11.79	13.18	9.25	.01	1.22	10.60	.17	1.10	.065		109	167	165	85.89	5	123	.9	165	.08			85.89	19	1

MINNOVA INC.

HOLE NUMBER: RG270 — DRILL HOLE RECORD — IMPERIAL UNITS: — METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 106+80 SECTION

PLOTTING COORDS GRID:
NORTH: 674.00N
EAST: 10675.00W
ELEV: 1099.93

ALTERNATE COORDS GRID:
NORTH: 6+74N
EAST: 106+75W
ELEV: 1099.93

COLLAR DIP: -85° 0' 0"
LENGTH OF THE HOLE: 125.30m
START DEPTH: 0.00m
FINAL DEPTH: 125.30m

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

DATE STARTED: July 11, 1989
DATE COMPLETED: July 13, 1989
DATE LOGGED: July 19, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: UTM 70785.26 N 2685.61W

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
18.30	-	-84° 0'	ACID	OK		-	-	-	-	-	
31.10	-	-85° 0'	ACID	OK		-	-	-	-	-	
71.90	-	-83° 0'	ACID	OK		-	-	-	-	-	
102.40	-	-83° 0'	ACID	OK		-	-	-	-	-	
125.30	-	-83° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG270 DATE: 5-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 18.30	«CASING»					
18.30 TO 19.00	«RUBBLE»	Qtz. vein and apyro frags.				
19.00 TO 26.20	«SER CHT + ARG»	Pale green/yellow. Typical sericitic chert argillite sequence strongly folded, broken core.		Strong (> 40%) sericite.	2-5% Dissem. py.	25% recovery.
26.20 TO 43.00	«FLT'D CHT + ARG BX»	Black. Fine grained. Strongly faulted chert arg. breccia with some massx fragments. FOLIATION SHEARING AT {37.5-40.1} «intense flt. with massx.frags.» {39.9-40.1} «massx. pieces in cht/arg bx.» mainly py. tr. cpy., gn.	 85 25			Note: Flt'd sx. zone.
43.00 TO 49.50	«FLT'D SER CHT + ARG»	Pale yellow/green. Fine grained. Typical sericitic chert argillite unit. Broken and intensely gouged. SHEARING AT {44.0-49.5} «flt. gdg.»	 45	Strong sericite (>30%).	2-5% diss. py.	
49.50 TO 53.60	«FLT'D DOL SST»	Grey/brown. Med. grained. Strongly faulted dolomitic sediment. {49.5-53.0} «flt. gdg.»		30% rust colour sericite.		
53.60 TO 61.60	«QTZ.-DOL STKWK»	Grey. Late, crosscutting qtz.-dolomite stockwork, with intense wall rock alteration. All structural and lithological fabrics are obliterated.		Intense dol-sil. alteration.	Minor diss. gn., py. throughout interval. {54.5-54.7} «5% gn., 2% sph., 2% tt.» Assoc. with late qdv.	
61.60 TO 112.60	«SED BX»	Black. Fine grained. Typical tectonic breccia with chert and argillite clasts. Intervals of intense silicification occur. Also intervals of greenish coarse grained wackes.(?). FOLIATION	 75	Strong silica veins in areas (>30%)	2-5% py. bands fine grained diss.	
112.60 TO 125.30	«DOL SST»	Grey. Med. grained. Denoted by the presence of rust colour (brown) sericite and overall competancy. Minor brecciated intervals. SHEARING AT FOLIATION	 35 80		{115.1-115.4} «15% py., tr. cpy., gn.» Assoc. with late qdv.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		END OF HOLE.				

HOLE NUMBER: RG270 ASSAY SHEET DATE: 8-November-1989

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD20626	37.50	38.60	1.10	.386	.35	.34	10.5	.24															
BCD20627	39.60	40.20	0.60	.360	1.08	.98	29.4	.41															
BCD20628	39.90	41.20	1.30	.398	1.58	.70	26.2	.30															
BCD20629	54.20	55.00	0.80	.008	.268	.25	4.2	.02															
BCD20630	56.60	58.10	1.50	.001	.02	.05	1.8	.02															
BCD20632	115.10	115.50	0.40	.004	.14	.63	5.6	.04															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD20631	83.50	85.30	1.80	42.64	15.63	7.01	6.03	.68	1.94	9.52	.22	1.23	.150		71	149	70	86.19	5	155	.8		.07				78	1
BCD20633	120.20	123.10	2.90	40.17	11.79	9.33	7.00	1.37	.72	8.89	.29	1.15	.09		102	121	187	82.74	10	84	1.2		.09				169	4

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG271 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 106+80 SECTION

PLOTTING COORDS GRID:
NORTH: 726.00N
EAST: 10674.00W
ELEV: 1107.00

ALTERNATE COORDS GRID:
NORTH: 7+26N
EAST: 106+74W
ELEV: 0.00

COLLAR DIP: -85° 0' 0"
LENGTH OF THE HOLE: 160.00m
START DEPTH: 0.00m
FINAL DEPTH: 160.00m

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

DATE STARTED: July 14, 1989
DATE COMPLETED: July 16, 1989
DATE LOGGED: July 20, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: STRATIGRAPHIC HOLE 50m NORTH OF RG269, 270.

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
3.70	-	-84° 0'	ACID	OK		-	-	-	-	-	
34.10	-	-83° 0'	ACID	OK		-	-	-	-	-	
89.90	-	-83° 0'	ACID	OK		-	-	-	-	-	
115.20	-	-78° 0'	ACID	OK		-	-	-	-	-	
160.00	-	-77° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 3.70	«CASING»					
3.70 TO 123.60	«MT?» MAFIC TUFFS	Grey/green. Fine to med. grained. Well laminated and very competant series of mafic tuffs. These may also be reworked volcanic-sediments.		5% qtz. stringers throughout. Rust colour sericite appears to increase at base of unit.	1-2% py. stringers.	A homogenous folded sequence. {92.2-94.6} «flt. gdge.»
		4.9m BEDDING	70			
		FOLIATION	45			
		26.7m BEDDING	20			
		Tops down hole, eg. overturned syncline.				
		52.1m BEDDING	45			
		70.8m BEDDING	45			
		82.7m BEDDING	10			
		85.6m BEDDING	0			
		116.9m BEDDING	10			
123.60 TO 124.90	«CHT + ARG BX»	Black. Fine grained. Tectonically brecciated chert + argillite.				
124.90 TO 160.00	«ALT MT»	Pale grey to green. Med. grained. Moderately altered mafic tuff (or reworked mafic derived sediment.)		Generally 15-20% rust brown sericite.		
		{127.9-135.4}		«60% lime green ser.»		
		{145.2-151.0} «fuch zone»		10% fuch, 10% brown sericite.	«10-15% diss. py.»	Assoc. with qdv.
		{153.0-157.4}		«60% rusty sericite»		
		{157.4-160.0}		«20% pale green sericite»		
		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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD20638	146.70	148.30	1.60	.015	.02	.05	2.1	1.24															
BCD20639	148.30	149.40	1.10	.004	.01	.01	2.0	.05															
BCD20640	153.90	155.40	1.50	.007	.06	.03	1.6	1.13															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD20634	23.00	25.80	2.80	42.6	17.06	3.76	8.48	2.92	.58	11.25	.17	2.2	.140		91	219	78	90.72	20	84	.5		.37				32	1
BCD20635	56.20	58.50	2.30	42.57	15.98	5.01	8.52	3.96	.05	10.26	.21	2.03	.010		93	255	120	89.44	5	189	.8		.34				21	1
BCD20636	95.50	98.50	3.00	36.12	13.33	8.34	8.69	1.25	.86	10.03	.27	1.71	.055		99	123	100	82.19	10	16	.9		.29				110	2
BCD20637	128.00	131.00	3.00	45.16	16.48	14.42	7.88	.64	2.34	8.93	.20	1.48	.210		100	84	70	97.92	5	88	1.2		.17				83	1
BCD20641	157.20	160.00	2.80	41.53	14.21	8.91	6.16	.53	1.71	8.93	.18	1.66	.330		75	99	72	84.44	5	278	.7		.20				91	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG272 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: SECTION 107+60

PLOTTING COORDS GRID:
NORTH: 621.00N
EAST: 10750.00W
ELEV: 1077.79

ALTERNATE COORDS GRID:
NORTH: 6+21N
EAST: 107+50W
ELEV: 1077.79

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 93.30m
START DEPTH: 0.00m
FINAL DEPTH: 93.30m

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

DATE STARTED: July 16, 1989
DATE COMPLETED: July 18, 1989
DATE LOGGED: July 21, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: 50% RECOVERY OVER ENTIRE HOLE. UTM 70794.01N 2595.85 W

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
20.10	-	-49° 0'	ACID	OK		-	-	-	-	-	
63.70	-	-49° 0'	ACID	OK		-	-	-	-	-	
89.00	-	-50° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 15.20	«CASING»					
15.20 TO 19.70	«SER CHT + ARG»	Pale yellow. Fine grained. Typical sericitic chert and argillite with 10cm intervals of black graphitic chert, argillite. FOLIATION BEDDING	 85 90	>50% sercite.	3-5% diss. and banded pyrite.	35% core recovery.
19.70 TO 26.20	«CHT + ARG»	Black. Fine grained. Graphitic chert and argillite. Broken and fractured core. Minor (10cm) intervals of sericitic chert/arg. FOLIATION	 85	Minor sericitic intervals (10cm)	5-10% med. to coarse grained py. in disseminations and bands.	40% core recovery.
26.20 TO 31.30	«SER CHT + ARG»	Pale yellow. Fine grained. Moderately altered cht. arg. 20% late qdv. FOLIATION	 85	{26.2-26.5} «20% fuch.»	Mssx. piece in ground core at 26.2m.	30% recovery.
31.30 TO 32.70	«QTZ DOL STKWK»	Grey and white. Strongly altered wall rock fabrics obliterated.		Pervasive qtz-dol alt.	3-6% diss. py.	25% recovery.
32.70 TO 36.60	«SIL CHT ARG»	Black. Fine grained. Chert argillite unit (graphitic) cut by (>40%) qtz. veins and stringers				30% recovery.
36.60 TO 62.50	«ARG + MT»	Black with green whisps. Finely interbedded mafic (chloritic) tuffs and black argillite. 10% qtz. veins + stringers dominated by argillite.			{59.1-59.2} «ms., py.» 60% mass. py. in sil. vein.	
62.50 TO 64.00	«MT»	Dark green. Fine grained. Chloritic, textureless unit. Broken core. FOLIATION	 85	Very weak sericite.	63.7- py., gn. band/vein 3cm wide.	
64.00 TO 64.90	«TALC»	Very dark green. Fine grained. Almost black, talc schist easily carved with a knife, although not tremendously soapy or greasy (possibly chlorite)? FOLIATION	 90			

HOLE NUMBER: RG272

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na
BCD20642	26.50	29.40	2.90	62.32	12.22	.17	3.9	.1
BCD20643	68.90	71.90	3.00	44.94	13.38	3.27	13.13	.0
BCD20646	89.90	92.50	2.60	47.95	9.71	.79	8.72	.0

HOLE NUMBER: RG272

ASSAY SHEET

HOLE NUMBER: RG272

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	PB %	AG G/T	AU G/T	SB %	AS %	CU PPM	ZN PPM	PB PPM	S.G.	AG OZ/T	AU OZ/T	GEOCHEMI AS PPM
BCD20644	78.80	80.30	1.50	.04	.34	.01	2.1	.01									
BCD20645	80.30	82.60	2.30	.03	.71	.05	2.5	.01									

ASSAY SHEET

HOLE NUMBER: RG272

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
64.90 TO 83.80	«ALT MT»	Med. green. Fine grained. Moderately competant unit. Minor 10cm black chlorite/talc layers.		Weakly sericitized with pale green sericite.	{77.7-83.8} «5-7cm bands of py., gn.»	
83.80 TO 93.30	«MT»	Apple green. Fine grained. Strongly chloritic with 20% carbonate veins and possible minor epidote.		Strongly sheared.	Tr. py.	{83.8-84.4} «flt. gdge»
		SHEARING AT	10			
		END OF HOLE.				

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG273 | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: SAM 107+60 SECTION

PLOTTING COORDS GRID: SAM
NORTH: 621.00N
EAST: 10750.00W
ELEV: 1077.70

ALTERNATE COORDS GRID:
NORTH: 6+21N
EAST: 107+50W
ELEV: 1077.70

COLLAR DIP: -85° 0' 0"
LENGTH OF THE HOLE: 123.70m
START DEPTH: 0.00m
FINAL DEPTH: 123.70m

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

DATE STARTED: July 18, 1989
DATE COMPLETED: July 20, 1989
DATE LOGGED: July 22, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: INTERSECTION OF MSSI ZONE (RG266) AT A 40m W AND 20m S STEPOUT, ON SAME COLLAR AS RG272. UTM

DIRECTIONAL DATA: 70795.24N 2595.85W

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
10.40	-	-86° 0'	ACID	OK		-	-	-	-	-	
31.70	-	-86° 0'	ACID	OK		-	-	-	-	-	
62.80	-	-86° 0'	ACID	OK		-	-	-	-	-	
93.10	-	-84° 0'	ACID	OK		-	-	-	-	-	
116.70	-	-84° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG273 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 10.40	«CASING»					
10.40 TO 15.20	«CHERT + ARG»	Black. Fine grained. Strongly silicified argillite, graphitic. FOLIATION	90			
15.20 TO 22.90	«DOL CHT + ARG»	Grey. Fine grained. Dolomitized and pyritized graphitic sediment. Whisps of graphite remain, but no primary fabrics exist in this competant unit. {22.2-22.3} «flt. gdg.» {22.5-22.6} «flt. gdg.» SHEAR	45	Strong >40% dolomite.	«>25% fine grained diss. py.»	
22.90 TO 24.10	«FLT GDG»	Black. Fine grained. Graphitic fault goudge.			{23.0-23.1} «mssx» 60% gn., 5% cpy., 5% sph.	
24.10 TO 31.60	«FLT»	Black. Fine grained. Partially rehealed fault goudge. Upto 60% qs. + qv. Brecciated and healed qtz. veins persist.				
31.60 TO 35.60	«CHT + ARG»	Black. Fine grained. Strongly silicified argillite (pre foliation silicification). BEDDING	20			
35.60 TO 41.70	«DOL SST BX»	Grey. Med. grained. Weak to moderate brecciation and rehealing in this competant rock. Minor graphitic whisps. FOLIATION	35	>15% rust brown sericite, on foliation or shear cleavage.		
41.70 TO 104.60	«CHT + ARG BX»	Black. Fine grained. Tectonically brecciated chert and argillite. Broken and contorted laminae FOLIATION 93.7m SHEARING	45 20	30% prefoliation silica string/vein.	(5-10% py. bands and clasts).	{102.8-104.5} «flt. gdg.»
104.60 TO 110.80	«DOL SST»	Grey. Med. grained. Competent and finely layered FOLIATION Compositional layering. SHEARING (late)	45 20 20	Strong dolomite alt'n, with pervasive rust brown sericite.	{110.7-110.8} «tr. gn., gpy.» assoc. with qdv.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
110.80 TO 123.70	«CHT + ARG BX»	Black. Minor wacke intervals in this strongly brecciated interval.			{117.3-117.4} tr. gn. cpy. in qdv.	
		SHEARING (early)	20			
		FOLIATION	30			
		SHEARS (late)	40			
		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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD20647	15.20	16.80	1.60	.005	.08	.33	1.8	.03															
BCD20648	16.80	18.30	1.50	.002	.07	.03	.3	.01															
BCD20649	18.30	19.00	0.70	.002	.11	.12	1.2	.21															
BCD20650	23.00	23.10	0.10	.426	18.9	7.4	131	.72															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22626	36.30	38.40	2.10	37.82	13.74	5.98	6.42	1.10	1.38	11.61	.39	1.19	.07		95	75	63		10	119	.7		.09				90	1
BCD22627	104.90	107.70	2.80	31.5	11.06	15.62	7.36	.36	1.89	7.03	.26	1.32	.085		68	63	76		5	91	1.1		.12				220	3

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG274 | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: SECTION 107+60

PLOTTING COORDS GRID: SAM
NORTH: 638.00N
EAST: 10748.00W
ELEV: 1077.60

ALTERNATE COORDS GRID:
NORTH: 6+38N
EAST: 107+48W
ELEV: 1077.60

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 63.40m
START DEPTH: 0.00m
FINAL DEPTH: 63.40m

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

DATE STARTED: July 20, 1989
DATE COMPLETED: July 21, 1989
DATE LOGGED: July 23, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: 20m STEP BACK FROM RG273. 65% TOTAL RECOVERY. UTM 70808.63N 2606.55W

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
21.30	-	-85° 0'	ACID	OK		-	-	-	-	-	
52.10	-	-84° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

geology to be redone printout wrong.

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG274 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00	«CASING»					
0.00	«CASING»					
0.00	«CASING»					
TO						
10.40						
10.40	«CHT + ARG»	Black. Fine grained. Broken core. Mixed graphi-				
10.40	«CHT + ARG»	Black. Fine grained. Broken core. Mixed graphi-				
10.40	«CHT + ARG»	Black. Fine grained. Broken core. Mixed graphi-				
TO		tic. chert and argillite.				
TO		tic. chert and argillite.				
TO		tic. chert and argillite.				
13.10						
13.10	«FLT GDG»	Black and yellow. Fault zone, intense goudge.		Rust brown sericite at the base of		
13.10	«FLT GDG»	Black and yellow. Fault zone, intense goudge.		Rust brown sericite at the base of		
13.10	«FLT GDG»	Black and yellow. Fault zone, intense goudge.		Rust brown sericite at the base of		
TO		Sericitic and graphitic.		interval.		
TO		Sericitic and graphitic.		interval.		
TO		Sericitic and graphitic.		interval.		
17.00		SHEARING AT	45			
17.00		SHEARING AT	45			
17.00		SHEARING AT	45			
17.00	«FLT'D DOL	Grey. Fine grained. Sheared dolomitized sedi-			{19.7-20.1} «mssx. clasts in flt.»	{19.0-19.2} «flt. gdg.»
17.00	«FLT'D DOL	Grey. Fine grained. Sheared dolomitized sedi-			{19.7-20.1} «mssx. clasts in flt.»	{19.0-19.2} «flt. gdg.»
17.00	«FLT'D DOL	Grey. Fine grained. Sheared dolomitized sedi-			{19.7-20.1} «mssx. clasts in flt.»	{19.0-19.2} «flt. gdg.»
TO	SST»	ments. 30% qds. + qdv.				
TO	SST»	ments. 30% qds. + qdv.				
TO	SST»	ments. 30% qds. + qdv.				
32.90						
32.90	«CHT + ARG	Black. Variably brecciated argillite and cherts.		Prefoliation qtz. stringers.		
32.90	«CHT + ARG	Black. Variably brecciated argillite and cherts.		Prefoliation qtz. stringers.		
32.90	«CHT + ARG	Black. Variably brecciated argillite and cherts.		Prefoliation qtz. stringers.		
TO	BX»	25% bull qtz. veins.				
TO	BX»	25% bull qtz. veins.				
TO	BX»	25% bull qtz. veins.				
63.40		{60.4-62.4} «bull qv.»				
63.40		{60.4-62.4} «bull qv.»				
63.40		{60.4-62.4} «bull qv.»				
		END OF HOLE.				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		END OF 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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
22628628	19.70	20.10	0.40	.57	.72	1.85	18.8	.22															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
ECD22629	29.90	32.90	3.00	35.27	10.47	13.07	8.80	.71	.96	9.08	.47	.95	.1	129	258	132	1.2	10	162		32	.05	80.98					

MINKOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG275 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: SAM 107+60 SECTION

PLOTTING COORDS GRID:
NORTH: 712.00N
EAST: 10756.00W
ELEV: 1082.00

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 103.90m
START DEPTH: 0.00m
FINAL DEPTH: 103.90m

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

DATE STARTED: July 21, 1989
DATE COMPLETED: July 23, 1989
DATE LOGGED: July 25, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: 70m STRPBACK FROM RG274. TEST OF STRATIGRAPHY AND ANTIFORMAL MODEL.

DIRECTIONAL DATA: need correct survey elevation.

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
10.10	-	-49° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 7.30	«CASING»					
7.30 TO 43.70	«CHT+ARG»	Black. Fine grained. Variably brecciated intervals and strong silica flooding 25% qdv.-qds. {11.3-17.7} «cht.+arg. bx.» {32.9-43.7} «bx. and flt'd» {42.7-43.2} «gry. cht.» At 32.8m BEDDING	45	Strong silicification throughout.	{15.4-15.8} «30% py. diss. + bands» {21.7-22.0} «pyritic wcke.»	Generally 40-50% recovery.
43.70 TO 79.20	«DOL SST MT?»	Grey. Med. grained. A typical grey, competant sequence with intervals (short) of graphitic seds. Rust brown sericite common. Coring angles infer closure in an antiformal structure. Unit is also brecciated and healed. 50.7m BEDDING 50.7m FOLIATION {50.3m-53.4} «cht.+arg.»	15 60	10-15% rust brown sericite, and qtz. dolomite veins. (25%)	1-5% diss. py. 10% fine grained py. bands.	Faulted basal and top contact.
79.20 TO 103.90	«CHT + ARG»	Black. Fine grained. Moderately laminated section. Minor bx. intervals. {100.1-101.3} «flt. gdg.» FOLIATION BEDDING END OF HOLE.	80 45	20% qdv.-qds.	1-3% fine grianed diss. py. {88.7-88.8} «tr. sph., cpy., gn.» in qv.	

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
ECD22630	15.40	15.80	0.40	.019	.02	.01	1.8	.14															
ECD22631	21.70	22.00	0.30	.030	.02	.02	0.3	.02															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22632	61.80	64.50	2.70	33.52	10.90	14.58	7.11	.90	.94	9.91	.22	1.00	.04		94	83	64	79.99	40	79	1.1		.01				36	4
BCD22633	69.10	71.80	2.70	29.49	8.83	18.54	6.30	.92	1.01	9.36	.18	.81	.045		66	58	58	76.02	30	61	1.2		.01				42	8
BCD22634	83.60	86.30	2.70	61.08	13.93	1.13	3.31	.53	3.00	6.57	.37	.73	.115		58	94	43	91.25	5	65	.1		.01				28	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG276 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 107+20 SECTION

PLOTTING COORDS GRID:
NORTH: 558.00N
EAST: 10733.00W
ELEV: 1081.57

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

COLLAR DIP: -50° 0′ 0″
LENGTH OF THE HOLE: 278.60m
START DEPTH: 0.00m
FINAL DEPTH: 278.60m

COLLAR GRID AZIMUTH: 180° 0′ 0″
COLLAR ASTRONOMIC AZIMUTH: 225° 0′ 0″

DATE STARTED: July 23, 1989
DATE COMPLETED: July 28, 1989
DATE LOGGED: August 3, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP.

PURPOSE: CONTINUATION OF STRATIGRAPHIC FENCE ALONG 107+20mNSECTION. HOLE COLLARED 100m S OF RG266.

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
59.70	-	-50° 0′	ACID	OK		-	-	-	-	-	
187.80	-	-54° 0′	ACID	OK		-	-	-	-	-	
246.00	-	-49° 0′	ACID	OK		-	-	-	-	-	
137.60	210° 0′	-50° 0′	TRO-PARI	OK		-	-	-	-	-	
263.90	200° 0′	-50° 0′	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 6.70	«CASING»					
6.70 TO 244.50	«MPYRO»	Minor alteration in an otherwise homogenous sequence of mafic lapilli tuffs. Lightly sericitized liapilli and minor intervals of ash tuffs.		20% pervasive qtz. carbonate veins and stringers.	2-10% py. associated with sericite altered intervals.	
		FOLIATION	80			
				{68.9-71.0} «rust ser. alt.»	«15% py. string»	
				{162.0-165.8} «15% yellow ser.» assoc. with late qdv./qds.	«20% py. string»	
				{174.8-175.2} «20% yellow ser.» assoc. with late qdv./qds.	10% py. string.	
				{196.5-209.7} «40% yellow ser.» pervasive.		
		{209.7-244.6} «grey, green, mpyro.» Dolomitized slightly graphitic, mafic lapilli tuff. Relict lapilli. Chlorite and sericite increase at base of unit.			«5-7% py. bands»	
		FOLIATION	80			
244.50 TO 278.60	«CHT + ARG»	Possibly rea sediments. A variably brecciated and sericitized sequence of cherts and argillites.				{244.7-245.0} «flt. gdge.»
		FOLIATION	75			
				{251.7-254.3} «flt'd. ser. arg.»	20% py. string.	
				{259.8-266.4} «sed. cht. arg.»		
		{263.0-278.6} «arg.» Well laminated distal turbidites.				
		END OF HOLE.				

HOLE NUMBER: RG276 ASSAY SHEET DATE: 8-November-1989

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22663	68.90	70.60	1.70	.019	.08	.07	1.9	.02															
BCD22666	135.50	136.40	0.90	.005	.02	.02	2.0	.02															
BCD22667	136.80	138.30	1.50	.004	.02	.02	1.6	.03															
BCD22670	164.10	165.60	1.50	.004	.02	.02	1.7	.04															
BCD22671	169.10	170.60	1.50	.03	.01	.01	1.3	.03															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22662	41.50	44.50	3.00	42.43	13.25	8.96	9.44	1.14	1.55	9.55	.16	1.65	.05		80	129		89.48	5	95	1.3	133	.39				1	1
BCD22664	74.00	78.00	4.00	39.77	14.83	10.77	5.75	3.86	.87	10.04	.14	1.52	.025		91	97		88.27	5	50	.6	45	.38				1	2
BCD22665	104.00	107.00	3.00	43.43	15.10	9.15	7.09	3.59	1.30	10.50	.17	1.68	.065		123	67		93.39	5	142	3.1	37	.38				1	2
BCD22669	141.30	144.30	3.00	44.70	15.41	7.74	6.49	4.59	.35	10.22	.18	1.59	.010		107	76		91.73	5	30	3.1	40	.36				1	2
BCD22672	176.10	179.00	2.90	44.70	14.64	7.31	7.71	2.50	.94	9.71	.16	1.51	.025		81	81		89.63	10	53	.3	40	.34				1	1
BCD22673	209.20	212.20	3.00	38.15	14.27	9.19	6.07	3.31	1.20	10.23	.16	1.43	.020		84	95		84.88	5	25	.2	39	.36				1	1
BCD22674	239.30	241.90	2.60	59.22	17.83	.47	2.93	1.21	3.44	6.64	.05	.91	.070		46	126		93.33	5	104	.1	35	.13				14	1
BCD22675	271.00	274.00	3.00	40.17	16.68	6.50	6.64	2.77	1.68	10.48	.18	1.49	.075		97	79		87.76	5	69	.3	40	.33				1	4

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG277 | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 106+15 SECTION

PLOTTING COORDS GRID:
NORTH: 705.00N
EAST: 10617.00W
ELEV: 1118.80

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 214.10m
START DEPTH: 0.00m
FINAL DEPTH: 214.10m

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

DATE STARTED: July 20, 1989
DATE COMPLETED: July 21, 1989
DATE LOGGED: July 29, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP.

PURPOSE: 65m STEPUP, 25m STEPBACK FROM 106+80 SECTION FOR INTERSECTION OF MSSI ZONE. 1st INTERSECTION OF

DIRECTIONAL DATA: BOTH ZONES WITH RECOVERY.

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
60.40	-	-49° 0'	ACID	OK		-	-	-	-	-	
111.60	-	-50° 0'	ACID	OK		-	-	-	-	-	
143.90	-	-50° 0'	ACID	OK		-	-	-	-	-	
201.20	-	-51° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 13.40	«CASING»					
13.40 TO 29.30	«RUBBLE»	Mpyro. + qtz. boulders.				25% recovery.
29.30 TO 44.50	«SER CHT + ARG»	Yellow. Fine grained. Intensely sericitic absence of graphite. FOLIATION	90	75% pale yellow sericite.	10% py. bands (> 5mm) paralell to foliation.	
44.50 TO 115.10	«SER CHT + ARG»	Yellow and black. Fine grained. Variably sericitized and brecciated sediments finely laminated, possibly transposed, intervals of graphitic seds. Transposition makes contact relationships obscure. FOLIATION 25% prefoliation qtz. stringers and veins. {82.4-103.6} «graphitic seds.» {104.6-106.0} «cherts» 105.0m BEDDING {114.6-115.1} «pymnt.»	90 20	10-60% pale yellow sericite. {44.5-59.7} «weaker (20%) ser.»	10-15% py. bands. {72.9-73.9} «mssx. 65% py., 5% gn., 5% sph., 5% cpy.» Coarse grained, weak banding qtz. gangue.	Good recovery. {107.8-110.1} «flt.»
115.10 TO 138.60	«CHT»	Black to grey. Fine grained. Lesser silicified argillite at top of sequence. Generally black to grey graphitic cherts.			{117.8-118.4} «mssx 55% py., 10% gn., 5% sph., 3% cpy.» {121.4-121.5} «mssx., 2% gn., 60% py., tr. sph., cpy.»	No alteration near sulphides.
138.60 TO 160.30	«SER CHT + ARG»	Yellow. Fine grained. Typical sequence with sericite alteration decreasing towards base of unit.	85	>50% pervasive sericite.	5-10% py. bands (<2mm) parallel to foliation.	Transitional contact.
160.30 TO 175.70	«CHT + ARG»	Black. Fine grained. Unaltered 15% qtz. veins and stringers.			5-10% py.	
175.70 TO 190.90	«ALT MPRYO»	Apple green. Fine grained. Alternating sequence of lappilli and ash tuffs lapilli preferentially sericitized.	75	>30% sericite pervasive. Possibly associated with foliation parallel qtz.-carb. veins and stringers.		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
190.90 TO 194.90	«ARG»	Black. Fine grained. Strongly silicified. 50% qtz.-carb. veins and stringers.				
194.90 TO 214.10	«MPYRO»	Green. Fine grained. Typical mafic lapilli tuff sequence with sericitized lapilli. {200.5-202.0} «talc or massive chl.»			199.7 - 5cm vein of sph., gn.	
		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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22639	68.20	69.70	1.50	.001	.02	.01	.09	.03															
BCD22640	69.70	71.40	1.70	.002	.02	.01	1.2	.02															
BCD22641	71.40	72.90	1.50	.028	.18	.14	2.0	.18															
BCD22635	72.90	73.90	1.00	.742	2.35	7.52	98	.47															
BCD22642	73.90	75.40	1.50	.057	.21	.10	2.6	.11															
BCD22643	78.10	79.60	1.50	.002	.01	.01	1.0	.02															
BCD22645	93.60	96.10	2.50	.001	.01	.01	1.4	.01															
BCD22646	110.60	112.50	1.90	.001	.02	.01	1.6	.01															
BCD22647	112.50	113.80	1.30	.002	.01	.01	0.8	.01															
BCD22648	113.80	115.10	1.30	.001	.01	.01	0.7	.01															
BCD22636	117.80	118.40	0.60	1.02	7.35	4.65	40.2	.98															
BCD22649	121.20	121.30	0.10	1.99	5.50	9.02	162.0	3.82															
BCD22654	201.70	203.20	1.50	.082	.92	.52	6.9	.01															
BCD22655	206.00	207.50	1.50	.018	.04	.03	3.1	.01															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22637	31.80	35.20	3.40	60.81	17.28	.05	1.95	.42	4.46	6.91	.33	.72	.110		17	63		96.22	10	78	.1	36	.10				129	1
BCD22638	62.90	65.90	3.00	60.45	12.80	.47	1.79	.47	4.31	6.36	.29	.76	.115		75	103		94.78	5	81	.1	73	.10				165	1
BCD22644	89.30	93.30	4.00	84.80	5.87	.17	.52	.14	1.41	3.46	.01	.30	.135		20	29		99.22	30	124	.5	177	.04				413	5
BCD22650	122.50	125.50	3.00	50.39	12.50	1.94	6.72	.37	2.18	10.72	.37	1.22	.120		87	274		91.30	55	114	.4	191	.26				202	2
BCD22651	139.00	141.40	2.40	63.89	14.60	.62	2.36	.29	3.44	6.37	.36	.63	.180		27	86		95.09	5	106	.1	44	.11				111	1
BCD22652	176.00	179.00	3.00	33.90	15.05	7.78	10.29	.04	.23	13.39	.23	1.71	.015		118	139		83.85	5	31	.9	63	.46				5	1
BCD22653	196.60	198.10	1.50	53.30	15.96	2.77	7.30	.04	3.72	6.64	.25	.64	.175		71	163		92.93	5	122	.5	127	.26				1	3
BCD22656	210.40	213.40	3.00	43.31	11.86	0.00	0.81	1.31	.07	0.61	.10	1.00	.006		79	171		67.11	10	14	1.1	73	.43				1	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG278 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 106+15 SECTION

PLOTTING COORDS GRID: mine
NORTH: 752.00N
EAST: 10614.00W
ELEV: 1125.24

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 242.60m
START DEPTH: 0.00m
FINAL DEPTH: 242.60m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: August 3, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: 50m N STEPFORWARD FROM RG277. INTERSECTION OF TWONSSI ZONES.

DIRECTIONAL DATA: UTM 2783.573E 70807.594N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
111.30	-	-49° 0'	ACID	OK		-	-	-	-	-	
153.60	-	-50° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 34.40	«CASING»					
34.40 TO 41.40	«QTZ STKWK»	White. Bull qtz. vein stockwork in a graphitic sediment. 90% qtz. veins.			1-2mm bands of py. (ribboned).	
41.40 TO 47.80	«CHT»	Grey. Fine grained. A finely laminated and variably brecciated grey chert. 25% qtz. dol. veins. {46.5-47.0} «bull qv.» 47.0 - 44.8 - grey chert.			«1% gn.,2%sph.,tr.cpy.» Ribboned veins.	{42.6-44.5} «flt.» rehealed.
47.80 TO 52.90	«QTZ. VEIN»	Bull qtz. vein.			«tr. gn., sph.»	
52.90 TO 54.90	«CHT + ARG»	Black. Fine grained. Variably silicified. FOLIATION	80		5-7% fine grained diss. py.	
54.90 TO 65.30	«QTZ STKWK»	Qtz. veins cutting graphitic chert argillites 80% qtz. veins.			{55.0-55.1} «tr. gn.»	
65.30 TO 120.70	«SER CHT + ARG»	Yellow. Fine grained. Typical sericitic tuff unit. Some small pyritic intervals closely resemble "muddy tuffs". {68.8-69.5} «cht.+ arg.» {72.4-73.4} «qv.» in black arg. {114.5-118.4} «shear zone» SHEARING	90	>60% sericite.	10-15% med.-fine grained disseм. and banded py. «1% gn., tt., sph.»	
120.70 TO 123.60	«CHT + ARG»	Black. Fine grained. Finely laminated with a prominent second foliation. Small parasitic folds verge uphole and to grid north. SHEAR FABRIC	45		15% diss. py. in shear foliations.	
123.60 TO 129.80	«CHT»	Black. Fine grained. Well laminated and folded. 128.6m BEDDING FOLIATION	35 85			South limb of antiform. Antiformal vergence to north.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
129.80 TO 135.90	«CHT + ARG»	Well laminated and brecciated sequences. 131.7m BEDDING FOLIATION	 0 75			Very close to fold axis.
135.90 TO 136.45	«MSSX»	Metallic yellow. Fine to med. grained. Weakly banded, recrystallized massive sx's. WEAK FOLIATION	 75		6% cu., 3% sph., 2% gn., 60% py., tr. tt. as blebs in cyp.	Good grade.
136.45 TO 142.50	«SER CHT + ARG»	Grey/yellow. Fine grained. Almost 'muddy tuffs' due to increase in pyrite.			{139.9-140.0} «smsx 70% py., 30% qtz. gangue» {140.5-140.8} «1% sph. in veinlets.»	
142.50 TO 145.00	«MSSX»	Metallic grey/yellow. Med. to coarse grained. Weakly banded, some very coarse grained pyritic zones.			{142.5-142.9} «20% cpy., 5% gn., 5%sph» 5% gangue. {142.9-145.0} «4% cpy., 3% gn., 6% sph» 30% gangue.	Exellent grade. Fair grade.
145.00 TO 146.30	«SMSX»	Grey. Med. grained. Mssx bands in a sericitic cht/arg.			{146.0-146.5} «1% cpy., 2% sph., 1% gn, 60% py.» 40% gangue.	Poor grade.
146.30 TO 147.20	«SER CHT + ARG»	Yellow. Fine grained. Minor graphitic sequences.			Py. bands 2cm.	
147.20 TO 174.00	«CHT»	Grey to black. Fine grained. Mainly grey chert with minor argillite intervals. 15% qtz. veins.			«10% fine grained py.»	{149.0-149.8} «flt. gdge.»
174.00 TO 195.50	«SER CHT + ARG»	Alternating sericitic and smaller graphitic sequences. FOLIATION	 90		15% py.	Flt. contact with top cherts.
195.50 TO 221.60	«CHT + ARG»	{195.5-213.0} «bx.»			2-5% py. bands and diss.	
221.60 TO 240.50	«ALT MPYRO»	Pale green. Fine grained. Sericite altered mafic lapilli tuffs.				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
240.50 TO 242.60	«ARG?»	Very dark green/black. Fine grained. Laminated. Talc rich (chlorite?) in places. END OF HOLE.		Strong chlorite.		Possibly a chloritized mafic volcanic?

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22676	37.70	38.90	1.20	.002	.01	.01	.2	.02															
BCD22677	46.40	46.80	0.40	.032	.37	1.33	22.4	.03															
BCD22678	49.30	50.80	1.50	.002	.02	.01	.2	.03															
BCD22679	52.20	53.00	0.80	.058	.28	.39	8.5	.04															
BCD22698	54.90	55.40	0.50	.099	2.28	.89	12.3	.14															
BCD22680	72.30	73.40	1.10	.100	.04	.18	3.8	.22															
BCD22683	97.90	99.40	1.50	.003	.02	.01	.3	.02															
BCD22684	135.40	136.80	1.40	.001	.01	.01	.2	.03															
BCD22657	135.90	136.30	0.40	1.42	2.73	4.12	51.7	.23															
BCD22685	137.30	138.80	1.50	.002	.02	.02	.3	.03															
BCD22686	138.80	140.20	1.40	.001	.01	.01	.4	.06															
BCD22687	140.20	141.80	1.60	.018	.18	.07	.9	.16															
BCD22688	141.80	142.60	0.80	.001	.02	.01	.2	.02															
BCD22658	142.50	144.00	1.50	.683	4.60	3.40	32.0	.29															
BCD22659	144.00	144.70	0.70	.403	5.10	2.68	24.6	.35															
BCD22660	144.70	146.30	1.60	.039	1.92	.69	4.9	.09															
BCD22689	146.30	147.30	1.00	.056	.25	.09	.3	.04															
BCD22690	150.20	151.70	1.50	.001	.02	.02.3	.05																
BCD22692	163.80	164.60	0.80	.002	.02	.01	.5	.12															
BCD22693	174.00	174.60	0.60	.002	.01	.01	.4	.03															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22681	73.60	77.90	4.30	62.83	15.78	.01	1.52	.28	4.11	6.85	.30	.75	.125		52	90		94.85	50	63	.1	69	.01				337	1
BCD22682	89.50	92.50	3.00	61.23	15.05	.01	2.61	.23	3.72	7.41	.40	.82	.105		61	66		92.68	10	70	.1	56	.01				59	1
BCD22691	158.00	161.00	3.00	85.99	5.34	.34	.32	.05	1.35	3.07	.01	.32	.170		29	22		98.81	10	181	.3	8	.01				67	1
BCD22694	181.00	184.00	3.00	53.80	16.11	1.45	4.68	.28	4.03	6.73	.61	.74	.255		29	48		89.52	5	136	.1	53	.01				34	1
BCD22695	216.90	219.90	3.00	58.22	15.07	2.07	4.17	.01	2.87	9.27	.17	1.04	.175		101	162		93.84	5	150	.3	44	.01				27	1
BCD22696	228.20	231.20	3.00	35.50	11.76	14.04	8.91	1.59	.01	10.85	.18	1.24	.005		96	99		84.44	5	26	.7	56	.01				1	2

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG279 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 107+20 SECTION

PLOTTING COORDS GRID: MINE
NORTH: 415.00N
EAST: 10729.00W
ELEV: 1081.09

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 166.10m
START DEPTH: 0.00m
FINAL DEPTH: 166.10m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: August 6, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: 150m S STEPBACK FROM RG276 ON LINE 107+20 FOR INTERSECTION OF REA HORIZON.

DIRECTIONAL DATA: UTM'S 2465.2mE 70628.05mN

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
153.90	214° 0'	-48° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 6.70	«CASING»					
6.70 TO 86.20	«MPYRO»	Green. Fine to med. grained. A typical sequence of chloritic lapilli/ash tuffs. Variable sericite alteration over short intervals. FOLIATION	55	{32.4-34.7} «alt. mpyro.» Assoc. with qdv. {74.7-80.8} «alt. mypro.» Assoc. with qtz. vein.	Pyrite (2-7% fine grained bands) commonly associated with sericite alteration.	
86.20 TO 135.50	«DOL MYPRO»	Grey. Fine grained. Very competant, dolomitic volcanic. Ghosted lapilli are very weak. Dolomitized sediment is also possible although sed. textures are not apparent. Brecciation occurs over short intervals. FOLIATION	65	Strong (>50%) pervasive dolomite with assoc. pyritization. Rust brown ser. common.	«15% fine grained diss. py.» Locally semi massive to massive py. {112.8-112.9} «mspy.»	Possible stringer zone? {97.0-96.6} «flt. gouge» {99.0-99.8} «flt. gouge» Fualt contact at base.
135.50 TO 166.10	«REA SEDS»	Black. Fine grained. Typical rea sediment sequence. Distal turbidites crosscut by 30% bull qtz. veins. Argillites with minor wacke interbeds {147.1-152.5} «90% qv.» END OF HOLE.		Sericite alteration associated with qtz. veins.		{136.2-137.1} «flt. gouge»

Sample	From (m)	To (m)	Length (m)	ASSAYS CU %	ZN %	FE %	AG G/T	AU G/T	SB %	AS %	GEOCHEMICAL CU PPM	ZN PPM	PB PPM	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22701	70.20	71.70	1.50	.003	.03	.01	.9	.03															
BCD22703	78.40	79.90	1.50	.003	.06	.01	.7	.03															
BCD22705	110.70	112.20	1.50	.014	.13	.03	1.8	.02															
BCD22706	112.50	112.80	0.30	.004	.08	.02	2.0	.21															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22699	11.30	13.30	2.00	44.92	15.49	8.02	6.09	4.15	.19	11.05	.16	1.07	.010		100	83		92.47	10	23	1.8	43	.05				1	1
BCD22700	43.30	46.10	2.80	42.47	13.71	9.96	8.02	3.10	.01	9.91	.15	1.35	.075		73	88		88.87	5	382	.6	48	.04				1	1
BCD22702	74.30	77.20	2.90	40.85	13.38	10.12	7.98	.72	2.09	9.54	.26	1.51	.030		78	139		89.35	5	27	.7	54	.13				5	6
BCD22704	103.60	106.50	2.90	62.96	10.62	3.06	1.78	.23	2.38	8.59	.13	1.47	.020		72	125		98.47	75	23	.8	81	.21				155	6
BCD22707	119.20	122.20	3.00	44.25	13.46	7.65	4.47	1.38	1.92	11.75	.25	1.10	.020		87	77		95.46	30	28	.6	53	.01				45	7
BCD22708	130.20	133.20	3.00	38.27	13.60	10.59	7.93	.43	2.36	12.34	.40	1.06	.065		70	88		92.70	10	45	.7	106	.01				35	9

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG280 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: SAM 106+10W SECTION

PLOTTING COORDS GRID: MINE
NORTH: 806.00N
EAST: 10609.00W
ELEV: 1127.62

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 231.40m
START DEPTH: 0.00m
FINAL DEPTH: 231.40m

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

DATE STARTED: August 4, 1989
DATE COMPLETED: August 7, 1989
DATE LOGGED: August 7, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX CAMP

PURPOSE: 50mN STEPBACK FROM RG 278 TO INTERSECT MSSX ZONE UTM 2822.732E 70845.618N

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
44.50	-	-52° 0'	ACID	OK		-	-	-	-	-	
90.20	-	-50° 0'	ACID	OK		-	-	-	-	-	
163.10	-	-51° 0'	ACID	OK		-	-	-	-	-	
190.50	-	-49° 0'	ACID	OK		-	-	-	-	-	
233.50	-	-50° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 29.50	«CASING»					
29.50 TO 181.60	«MT»	Lt. green. Fine to med. grained. Variably altered mafic tuffs. A very competant section which is weakly laminated.		Dolomitization, silicification and pyritization are all commonand pervasive. {73.5-76.9}«qdv» {102.4-105.5}«strg. bleaching» {145.2-152.4}«25% qdv.»	«1-5% diss. py.» minor gn.,py. selvages associated with qdv.	Transitional cntact to basal seds.
181.60 TO 203.60	«CHT + ARG»	Black. Fine grained. A slightly altered sequence (over small discrete intervals). FOLIATION BEDDING Fold axis 202.8m (parallel to foliation) 20% qdv parallel to foliation. {189-191}«bull qcv tr. gn.»	 45 30 45	Slight dark green sericite in small intervals.	Generally 5-7% py. in bands parallel to foliation.	
203.60 TO 231.40	«ALT MPYRO»	Green to grey. Fine grained. Strngly sericitized mafic lapilli tuff. Dark grey matrix. 10% cross-cutting qdv. END OF HOLE		Sericitized frags.	«1-2% fine grained diss. py.» {221.2-221.3} «gn., py. selage» assoc. with qdv.	

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB		COMMENTS
BCD22711	46.30	46.50	0.20	.028	1.16	.68	8.8	.12																
BCD22712	49.30	49.60	0.30	.11	.78	1.04	7.8	.2																
BCD22710	50.50	50.60	0.10	.073	.07	1.86	21.6	.23																
BCD22715	128.80	129.20	0.40	.002	.03	.03	.1	.05																
BCD22716	129.70	130.00	0.30	.03	.27	.24	3.2	1.06																
BCD22718	145.10	145.60	0.50	.01	.27	.01	1.9	.03																
BCD22720	176.80	178.20	1.40	.002	.02	.02	.2	.01																
BCD22721	185.20	190.50	1.30	.001	.01	.02	.1	.02																
BCD22722	190.50	191.00	0.50	.002	.02	.02	.2	.03																
BCD22724	221.20	221.30	0.10	.157	1.02	.69	10.5	.23																

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22709	35.30	38.30	3.00	39.07	12.69	9.08	8.37	.31	1.46	9.76	.32	1.57	.355		55	141		84.99	35	162	.9	64	.32				228	4
BCD22713	70.40	73.40	3.00	41.52	14.65	6.76	7.15	2.42	.66	11.06	.24	3.03	.095		30	124		89.44	15	75	.8	51	.30				26	1
BCD22714	102.40	105.40	3.00	42.05	13.67	8.71	6.70	.54	1.86	8.83	.16	1.29	.205		70	87		84.53	15	101	1.2	39	.28				89	1
BCD22717	137.50	140.50	3.00	42.55	12.21	9.56	5.89	.42	2.25	7.97	.23	1.16	.285		48	76		83.06	10	132	.9	40	.28				89	1
BCD22719	166.30	169.30	3.00	45.07	14.05	7.18	6.13	.91	1.12	8.72	.17	1.31	.080		66	85		85.39	5	61	.8	36	.25				45	1
BCD22723	218.30	221.20	2.90	39.17	12.61	7.30	10.02	.20	1.70	10.54	.22	1.21	.410		101	182		85.95	90	239	1.2	245	.31				233	6

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG281 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 106+20 SECTION

PLOTTING COORDS GRID: MINE
NORTH: 421.00N
EAST: 10622.00W
ELEV: 1110.01

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 178.30m
START DEPTH: 0.00m
FINAL DEPTH: 178.30m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: August 9, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX CAMP.

PURPOSE: APPROXIMATE LAOCTION AT 106+20mW, 2+70mN.

DIRECTIONAL DATA: UTM'S 2551.54mE 70558.42mN

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

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG281 DATE: 9-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.20 TO 10.40	«CASING»					
10.40 TO 13.80	«RUBBLE»	Mixed particles of overburden.				
13.80 TO 44.20	«MAF INT»	Green. Med. grained. A very competant unit with strong granoblastic textures. Generally consists of retrograde chlorite (from hornblende, pyroxene) and feldspar. Well foliated with rip-ups at basal contact. 5% qdv. veins.			Py. bands and whisps increasing towards base.	Possible basal flow?
44.20 TO 64.00	«MPYRO»	Green. Fine grained. A series of ash and lapilli tuffs. Strongly altered near contact with intrusive. {44.2-49.9} «alt. ash tuffs» {49.9-57.0} «ash tuff» 20% qdv. {57.0-64.0} «mpyro» mafic lapilli tuffs.		Strong bleaching and sericitization (rusty sericite).	«Py. 15% whisps» {46.1-46.2} «sph., gn. in qdv.» {52.7-53.3} «15% py., tr. gn.» in qdv.	
64.00 TO 73.40	«MAF INT»	Green. Same as previous sequence.				
73.40 TO 81.30	«ALT MPYRO»	Pale green. Fine grained. Strongly sericitized (rusty colour) with primary fabrics obliterated. 10% qdv. crosscutting.		Pervasive rust colour sericite.	10% py. whisps.	
81.30 TO 136.90	«DOL MPYRO»	Grey to green. Fine grained. Primary fabrics obliterated. Minor intervals of chlorite matrix.		Perasive (>40%) dolomite. Trace fuchsite. Rust colour sericite.		Difficult lithology due to alteration over print.
136.90 TO 157.70	«REA HORIZON»	Black. Fine grained. Dolomitized wackes and black cherts slightly brecciated. {148.1-157.7} «cht.»		{146.-147.8} «20% fuchsite»	{147.8-150.8} «20% py. bands»	
157.70 TO 178.30	«REA SEDS»	Black. Fine grained. Laminated argillites or distal turbidites strongly foliated sub parallel to bedding. {175.0-177.2} «bull qv.» 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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22727	45.70	46.20	0.50	.013	..23	.29	2	.04															
BCD22728	48.40	49.90	1.50	.01	.03	.03	.8	.03															
BCD22729	52.60	53.30	0.70	.01	.05	.04	1.4	.05															
BCD22731	76.10	77.50	1.40	.004	.07	.02	.1	.02															
BCD22732	78.80	80.30	1.50	.01	.08	.02	.12	.02															
BCD22734	137.90	138.70	0.80	.012	.012	.01	.2	.01															
BCD22736	145.90	147.80	1.90	.009	.03	.02	.6	.02															
BCD22739	148.40	149.20	0.80	.002	.032	.01	.1	.18															
BCD22739	148.40	149.20	0.80	.002	.03	.01	.1	.18															
BCD22737	149.60	150.60	1.00	.002	.04	.02	.1	.29															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22725	25.90	28.90	3.00	43.34	15.15	6.99	7.99	4.05	.01	9.79	.15	1.41	.010		77	81		89.18	5	28	.7	40	.27				10	1
BCD22726	40.10	43.10	3.00	38.58	11.29	8.83	12.63	.89	.11	10.53	.22	1.06	.010		62	87		85.54	5	38	1.0	53	.35				6	1
BCD22730	69.00	72.90	3.90	39.58	11.05	8.04	12.96	.33	.01	10.62	.18	1.11	.005		61	97		85.15	5	21	1.2	50	.33				40	4
BCD22733	116.60	119.60	3.00	38.72	12.15	9.86	6.90	1.09	1.77	10.23	.30	1.37	.030		63	89		87.67	5	29	1.1	56	.31				124	5
BCD22735	141.50	144.00	2.50	22.54	10.09	18.92	10.20	1.75	1.13	7.92	.38	1.41	.030		43	642		77.37	5	31	1.7	102	.41				100	8
BCD22738	154.30	157.20	2.90	82.38	5.72	.06	.39	.06	.80	2.64	.01	.25	.075		12	35		93.95	15	93	.2	27	.05				24	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG282 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 105+70 SECTION

PLOTTING COORDS GRID: mine
NORTH: 733.00N
EAST: 10570.00W
ELEV: 1136.07

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 250.50m
START DEPTH: 0.00m
FINAL DEPTH: 250.50m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: August 17, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: FIRST HOLE ON FENCE 105+70mW SECTION. UTM 2803.476E 70762.988N

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
116.10	-	-50° 0'	ACID	OK		-	-	-	-	-	
154.20	-	-48° 0'	ACID	OK		-	-	-	-	-	
198.40	-	-53° 0'	ACID	OK		-	-	-	-	-	
235.30	-	-50° 0'	ACID	OK		-	-	-	-	-	
250.50	-	-50° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 24.30	«CASING»					
24.30 TO 26.20	«RUBBLE	Mixed mafic, and qtz. boulders.				
26.20 TO 32.00	«SER CHT + ARG»	Yellow to grey. Fine grained. Typical sericitic chert argillite with >30% crosscutting qtz. stockwork. FOLIATION	85		{29.2-30.5} «40% py., 5% sph., 2% gn., 2% cpy.» Assoc. with qv.	{30.7-30.9} «flt. gouge»
32.00 TO 45.90	«CHT»	Black. Fine grained. Black, graphitic, silicified cherts. 30% early folded qv.,minor argillite laminae, strongly folded, variably brecciated near base. {32.5-33.2} «ser. cht. arg.» FOLIATION AT 38.4m BEDDING	 85 0	Strong qtz. flooding adjacent to veins.	{33.4-33.5} «60% py., 25% gn.» band associated with qv. {33.6-37.8} «30% py., 1% gn., 2% sph.» {37.0-37.8} «10% py., stringers»	44.5-45.9 broken core.
45.90 TO 96.80	«SER CHT + ARG»	Yellow to grey. Fine grained. Strongly deformed laminae of chert and sericite.		«>50% sericite» {80.3-96.8} «intense (>65%) ser.»	«10-15% py. bands and stringers» {96.4-96.5} «massx- 75% py., 5% cpy.»	Transposed alteration contact with basal cherts.
96.80 TO 99.20	«BLACK CHERT»	Black. Fine grained. Well laminated, graphitc cherts. Minor brecciation. FOLIATION	 85	«20% qv.»	{96.9-97.4} «smsx- 70% py., 5% cp., 5% sph.» assoc. with qv?	
99.20 TO 107.10	«MIX'D CHT + ARG»	White to lt. green to black. A strongly interbedded sequence of white cherts argillite and minor fine grained wackes. FOLIATION 105.9 BEDDING 106.7 BEDDING	 80 45 70	Variable amounts of pervasive sericite over short discrete intervals.	5-10% py. bands parallel to foliation.	Brecciated towards base. Difficult lithology due to alteration overprint.
107.10 TO 109.50	«CHT + ARG BX»	Black. Fine grained. Moderately brecciated chert argillite. FOLIATION	 85	10% late qv.	«3-5% diss. py.»	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG282 DATE: 9-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
109.50 TO 130.60	«SER CHT + ARG»	Yellow to grey. Fine grained. Intense to moderate sericite with abundant pyritic intervals. -70% chert. FOLIATION (by shearing) {116.1-118.8} «mut?» 118.2m BEDDING	45 50	{109.5-116.1} «intense (>65%) ser.»	«5-20% py.» «25% fine grained py.»	Possible rotation of axial planar fabric unless shear overprints.
130.60 TO 134.20	«CHT»	Black. Fine grained. Black graphitic chert.	85	«20% late qv.»	{132.0-132.2} «sms» 45% py., 2% cpy., 10% sph.	Possible permeability cap to underlying dolomitic alteration.
134.20 TO 168.00	«DOL SED»	Grey. Fine grained. Strongly dolomitized sediment. Possibly mixed argillite and wacke. Relict laminar and breccia textures. Moderately competent unit. FOLIATION	85	Pervasive (>30%) rust colour sericite «>45% pervasive dol»	«10-15% fine grained py.» Dissem. and banded.	
168.00 TO 220.40	«CHT + ARG BX»	Mixed and brecciated cherts and argillites. Minor sericitic intervals and minor wacke beds. 177.0m BEDDING {168.0-187.7} «mod lam'd» {187.-205.4} «well br'd» {205.4-208.4} «mod lam'd v. chty.»	0	{172.0-173.1} «ser.» {174.1-176.2} «ser.»	2-10% py. blebs and bands.	
220.40 TO 224.60	«ALT MPYRO»	Lt. green. Med. grained. Green, ash tuff weakly laminated possible lapilli. FOLIATION	75	10% crosscutting «talc veinlets»		
224.60 TO 234.60	«CHT + ARG»	Black. Fine grained. A well laminated sequence of graphitic chert and argillite. FOLIATION	85		«1-2% diss. py.»	Not brecciated.
234.60 TO 236.90	«MPYRO BX»	Green. Fine grained. Brecciated mafic lapilli tuff and ash tuff.		weak ser.		
236.90 TO 250.50	«MPYRO»	Green. Fine grained. Sericitized lapilli tuff. Chloritic matrix. FOLIATION END OF HOLE.	80	Weakly sericitic lapilli.		Same unit as sam hangingwall.

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22740	29.40	30.10	0.70	.925	2.87	2.00	300.0	.46															
BCD22741	33.30	35.30	2.00	.286	2.50	1.48	60.4	.17															
BCD22742	42.60	42.90	0.30	.020	.02	.02	2.3	.05															
BCD22745	93.90	95.40	1.50	.031	.31	.02	0.4	.05															
BCD22746	95.40	96.30	0.90	.158	3.80	.18	4.3	.21															
BCD22747	96.30	96.60	0.30	.052	.02	.03	1.5	.15															
BCD22748	97.20	98.30	1.10	.083	3.83	.27	8.4	.32															
BCD22749	116.20	117.20	1.00	.002	.02	.01	0.5	.02															
BCD22776	131.50	132.10	0.60	.091	1.52	.13	2.4	.22															
BCD22779	181.00	181.70	0.70	.070	.59	.06	.08	.17															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22743	46.20	49.20	3.00	59.97	16.54	.38	1.70	.36	4.64	7.06	.32	.72	.155		27	71		94.68	10	97	.2	38	.09				324	1
BCD22744	74.50	78.40	3.90	63.26	13.46	.76	2.52	.32	3.78	7.11	.40	.56	.110		38	191		94.11	10	171	.2	42	.12				77	2
BCD22750	120.00	121.50	1.50	62.26	15.35	.50	2.04	.47	4.10	6.09	.29	.65	.110		22	47		95.23	5	81	.2	47	.11				90	1
BCD22777	134.90	137.90	3.00	40.48	16.29	7.90	5.66	.79	3.78	9.43	.41	1.31	.115		113	77		89.85	5	81	.9	105	.29				188	9
BCD22778	162.30	165.30	3.00	42.31	14.86	7.59	5.77	.67	3.53	8.89	.64	1.30	.115		93	76		88.61	15	75	1.0	125	.28				884	11

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG283 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 105+20mW SECTION

PLOTTING COORDS GRID: MINE
NORTH: 404.00N
EAST: 10522.00W
ELEV: 1136.15

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

COLLAR DIP: -50° 0′ 0"
LENGTH OF THE HOLE: 178.90m
START DEPTH: 0.00m
FINAL DEPTH: 178.90m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: August 13, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: STRATIGRAPHIC HOLE ON REA ZONE AT 105+20mW 3+70mN.

DIRECTIONAL DATA: UTM'S 2622.63mE 70480.59mN

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
47.20	-	-49° 0′	ACID	OK		-	-	-	-	-	
99.10	-	-48° 0′	ACID	OK		-	-	-	-	-	
144.80	-	-48° 0′	ACID	OK		-	-	-	-	-	
178.30	-	-47° 0′	ACID	OK		-	-	-	-	-	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG283 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 24.10	«CASING»					
24.10 TO 46.20	«ALT MPYRO»	Lt. green to grey. Fine grained. A fairly competant, highly altered lapilli tuff. FOLIATION	85	{24.1-37.1} «mod. ser.» {27.1-39.6} «strg. rust ser.» Trace fuchsite, with pervasive qdv(20%) {39.6-46.2} «perv. dol.»	1-2% fine grained diss. py. «py. bands assoc. with qdv.»	{37.2-37.4} «flt. gouge» 37.4-41.7 - broken core. Note basal transitional contact.
46.20 TO 53.30	«HET CGL»	Lt. to dark grey. Coarse grained. Fairly competant, moderate alt. conglomerate foliation defined by alignment of grains in planar orientation, as well as by alteration. N.B. flattening of grains is weak. FOLIATION (75.85) Grading indicates tops are down hole (inverted strat.)	76	{46.2-27.7} «mod. ser». {48.3-50.6} «mod. ser». 50.6-53.3 - wk. ser. {48.5-49.1} «10% qdv».	{46.2-47.7} «fine grained sulphide matrix» {50.1-51.1} «3-5% fine grained dissem. py.»	46.2-47.7 - het. cgl. (fine grained) 47.7-48.3 - int. bed. blk. arg. 48.3-51.1 - cgl. 51.1-52.6 - graded wacke 52.6-53.3 - cgl.
53.30 TO 80.80	«SER ALT MTUFF»	Lt. green/grey. Fine gained. Generally competant with occasional zones (<10cm) of broken, fractured core. FOLIATION {76.-77.2} «FAULT» {80.7} «BEDDING»	85 20 70	{53.3-59.5} «qdv.» -qdv. 80% -fuchsite 3-5% -rusty ser. 5% -chl. 1-3% {59.5-74.0} «strg. rusty ser.» 74.-75. wk. ser. {75.-76.} «strg. qdv.» {77.2-80.8} «strg. chl.» -chl. 15-20% along fol. -rusty ser. 3-5% {61.7-62.2} «qdv.»	{53.3-59.5} «mod. stgr. py.» -py. stringers and podiform generally following alt'n. along fol. {61.7-62.2} «tr. gn., cpy.» -trace galena, cpy. podiform py. in qdv {62.2-75.} «tr. diss. py.» -trace to 1% locally dissem. as well as podifrom and vnlts. {75.-76.} «tr. gn., 1% diss., stgr., pod. py.» -qdv. {76.-80.8} «tr. py. in matrix.»	76.-77.2 - sharp fault contaly at 77.2m 78.-80.8 - transitional into mafic chrystal tuff unit.
80.80 TO 101.50	«CHL ALT MXTAL TUFF»	Medium to dark green. Med. grained. Competant medium grained total tuff. FOLIATION {91.9} «BEDDING» 82.5 developing shear zone 96.3 developing shear zone 98.6 developing shear zone 100.3 developing shear zone {87.3-87.4} «fault»	85 65 30	{80.8-101.5} «mod. chl., wk. ser.» {86.8-87.1} «qdv.» -mineralized, py. {80.8-101.5} «tr. rusty ser.» {80.8-101.5} «stkwrk. qc. vns.» -pervasive 2%, generally core axis.	{80.8-86.8} «tr. diss. py.» {86.8-87.1} «1% strg. py.» {87.1-87.2} «2-3% pod py» {87.2-87.7} «tr. 2% pod., strgr. py.» {87.7-101.5} «tr. 1% diss. py.»	-87.3-87.4 flt. gouge. -developing shear bones sympathetic with fault a 76m. -transition from xtal. tuff to mafic flow of next unit.
101.50 TO 119.00	«MAFIC FLOW»	Dark green. Med.-coarse. Generally competant medium to coarse grained (gradational) flow as indicated by flattened, elongate crystals having an imbrication. FOLIATION 111.3-11.4 ser. ash tuff int. bed. BEDDING	85 90	{101.5-106.6} «strg. chl.» {106.6-107.9} «perv. qdv rusty ser.» -rusty ser. 10-15% -chl. 5% 107.9-111.3 mod. to strg. chl., wk. ser 111.3-111.4 strg. ser. 111.4-112.6 mod. to strg. chl., wk. ser	{101.5-112.6} «tr. diss. py.» {112.6-112.9} «tr. to 1% diss. and strg py.» {112.9-119.0} «tr. diss. py.»	104.8-105.0 -fractured, broken 105.7-106.5 -broken 107.9-109.3 -fractured 113.6-113.8

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		112.6-112.9 ser. ash tuff int. bed. BEDDING 113.3-113.6 ser. ash tuff int. bed. 115.3-115.4 ser. ash tuff int. bed. {111.3-115.4} «ser. ash tuff interbeds.»	 90 90 90	112.6-112.9 strg. ser. 112.9-113.3 mod. to strg. chl., wk. ser 113.3-113.6 strg. ser. tr. fuch. 113.6-115.3 mod. to strg. chl., wk. ser 115.3-115.4 strg. ser. 115.4-119.0 mod. to strg. chl., wk. ser {106.6-119.0} «mod. to strg. ser., tr. fuch.»		-fractured, broken
119.00 TO 135.10	«MPYRO»	Med. grey/green. Med. grained. Competant weakly altered sericitilly, lapilli tuff. Small scale faulting and shearing throughout oriented at 30deg. to core axis with offsets no more than 2cm. FOLIATION	 85	119.0-135.1 wk. ser., wk. chl. Ser. 2-3%, chl. tr. - 1%. {119.0-125.1} «stkwrk. qvns.» -stkwrk. vns. 2%.	{119.0-135.1} «tr. diss. py.»	Very nondescript rock unit.
135.10 TO 141.20	«SER ALT M FLOW»	Lt. olive green. Very fine grained. Competant, very fine grained possibly amygdaloidal flow top with pervasive qtz. stockwork veining. Weak foliation sub. perpandicular core axis.	 85	{135.1-141.2} «strg. dol.» Pervasive dolomitization throughout possibly prior to qtz. stockwork as these do not contain dol. {135.1-141.2} «mod. ser.» masked by dolomitization.	{135.1-141.2} «tr. diss. py. to 3% loc»	presence of dolomite gives fm. pression rusty sericite present more than it is.
141.20 TO 145.20	«MAFIC TUFF»	Med. to dark green. Med. grained. Competant BEDDING FOLIATION	 90 85	{141.2-145.2} «mod. dol., wk. ser.»	{141.2-145.2} «tr. diss. py.»	Minor stockwork qtz. veining throughout
145.20 TO 167.20	«DOL ALT MPYRO»	Lt. to dark green/grey. Fine grained. Moderately competant dolomite, sericite altered lapilli tuff. Lapilli elongated, flattened in plane of foliation Bedding parallel foliation. 151.6 - sigmoidal qdv. axes parallel foliation.	 85	{145.2-152.9} «strg. dol.» «mod. ser.» {152.91-162.7} «mod. ser.» «wk. dol.» {162.7-167.2} «mod. to strg. ser.» 145.2-152.91 upto 70% dol.	{145.2-147.8} «tr. diss. py.» {147.8-148.3} «tr. pod. py.» Py. as replacement of possibly carb porphyroclasts. Upto 1cm in dimension. {148.3-152.9} «tr. 2% strgr. py.» Fine py. following foliations with ser. {152.9-156.7} «strgr. py. to 3%locally» Stringer py. along foliations. 157.-158.4 stkwk. py. stringers. Py. stckwrk stringers. Also podiform to 5% locally. 158.4-165. tr. diss. py. {165.-167.2} «20% banded diss. py.» Wispy bands of diss. py. to 20%.	147.8-151.5 broken core. 165.-167.2 transition to next unit. Graphitic int. beds.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
167.20 TO 178.90	«GRAPHITIC SEDIMENTS»	Dark grey to black. Fine grained. Thin bedded argillaleous and siltstone units int. bedded with wackes.			{168.6-168.7} «massive py.» slickensides on core.	169.4-172.4 wacke. 169.2-169.4 qvz.
		{167.2-167.3} «flt. gouge»				
		FOLIATION	90			
		BEDDING	85			
		{168.7-169.4} «flt.»				
		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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22802	46.60	47.70	1.10	.014	.08	.01	2.3	.01							.07	.001							
BCD22804	54.80	55.90	1.10	.003	.01	.01	1.9	.11							.06	.003							
BCD22805	58.30	59.30	1.00	.042	.39	.28	3.7	.17							.11	.005							
BCD22806	61.80	62.20	0.40	.187	.88	.91	12.4	.04							.36	.001							
BCD22808	74.90	75.60	0.70	.023	.31	.20	4.0	.04							.12	.001							
BCD22810	86.90	87.80	0.90	.017	.18	.10	2.1	.02							.06	.001							
BCD22816	166.90	167.30	0.40	.018	.13	.04	2.3	.04							.07	.001							
BCD22817	168.50	168.80	0.30	.038	.05	.03	5.4	.21							.16	.006							

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22801	32.00	35.00	3.00	47.12	16.50	4.20	4.80	3.92	2.10	9.18	.20	1.89	.020		89	191			65	22	1.3	59	.22				57	6
BCD22803	55.90	58.10	2.20	39.87	9.56	12.32	7.37	.70	2.25	8.97	.65	.92	.035		77	246			50	29	1.1	144	.35				180	18
BCD22807	67.30	70.00	2.70	44.07	16.08	5.72	7.53	3.66	1.02	9.91	.21	1.72	.040		75	130			5	37	.6	64	.28				73	4
BCD22809	84.10	86.40	2.30	42.75	13.15	6.50	11.33	1.83	.01	10.92	.22	1.81	.005		57	122			5	8	.6	70	.31				1	4
BCD22811	113.80	116.70	2.90	36.36	11.60	14.82	8.45	1.80	.22	8.56	.20	1.27	.015		63	95			5	28	.8	60	.36				9	1
BCD22812	129.40	132.40	3.00	40.04	12.80	13.93	5.30	1.64	1.02	8.82	.14	1.18	.030		76	80			5	40	.7	32	.32				1	1
BCD22813	138.60	141.00	2.40	41.28	13.16	13.30	5.47	1.23	1.57	8.13	.13	1.22	.060		68	81			5	188	.8	38	.31				11	1
BCD22814	142.00	148.00	6.00	40.83	10.03	11.01	6.00	4.38	.01	8.50	.13	1.35	.005		62	91			5	122	.8	63	.30				1	6
BCD22815	159.80	162.50	2.70	35.28	11.29	10.48	12.55	1.16	.26	9.51	.23	1.59	.020		86	87			5	8	.9	47	.36				14	1
BCD22818	175.60	178.60	3.00	62.43	14.2	2.27	2.88	.94	2.59	6.40	.06	.82	.070		37	154			5	55	.5	35	.13				31	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG284 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 108+20mW SECTION

PLOTTING COORDS GRID: MINE
NORTH: 430.00N
EAST: 10846.00W
ELEV: 1062.20

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 153.90m
START DEPTH: 0.00m
FINAL DEPTH: 153.90m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: August 16, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: STRATIGRAPHIC HOLE ON REA ZONE AT 108+20mW, 3+95mN

DIRECTIONAL DATA: UTM'S 2399.01mE 70702.33 mN

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
35.10	-	-51° 0'	ACID	OK		-	-	-	-	-	
71.60	-	-52° 0'	ACID	OK		-	-	-	-	-	
113.70	-	-53° 0'	ACID	OK		-	-	-	-	-	
139.60	-	-53° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG284 DATE: 9-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 15.80	«CASING»					
15.80 TO 18.70	«MAT»	Lt. brown/green. Fine grained, moderately competent mafic ash tuff. FOLIATION {17.1-17.3} «flt. gouge» Foliation defined by flattened chl. grns. Minor stwk. qvns.	65	{15.8-18.7} «mod. ser.» 15% 15.8-18.7 chloritic. 15.8-18.7 wk. dol.	{15.8-18.7} «tr. diss. py.»	17.6-17.7 crushed core. 18.3 brecciated.
18.70 TO 43.50	«MITALT»	Med. to dark green. Medium grained moderately competent mafic xtal. tuff. FOLIATION Foliation defined by alignment of platey chl., and by qtz. veining. Also minor late qtz. veining crosscutting foliation. 19.7-19.9 flt. gouge 20.3-20.5 flt. gouge 33.1-33.4 flt. gouge 42.3-42.4 flt. gouge	75	{18.7-43.5} «mod. ser.» 20%. {18.7-43.5} «mod. dol.» 20-25%. 18.7-43.5 chloritic.	{18.7-43.5} «tr. diss. py.»	{19.7-42.4} «numerous small scale faults».
43.50 TO 48.20	«M.A.T»	Med. to dark green. Fine grained mod. comp. mafic ash tuff. FOLIATION 43.9-44.1 flt. gouge 45.2-45.3 flt. gouge {43.9-45.3} «minor faults»	75	{43.5-48.2} «mod. ser.» 25% {43.5-48.2} «mod. dol.» 20% 43.5-48.2 chloritic.	{43.5-48.2} «tr. diss. py.»	43.5-48.2 stkwk qtz. veins 1%, weakly pyritic. 43.5-43.2 occ. interbeds m.xtal. tuffs.
48.20 TO 76.10	«M ITAL T»	Med. to dark green. Med. grained, moderate to sub moderately competent mafic xtal. tuff. FOLIATION {67.4} «minor flt. gouge»	75	{48.2-76.1} «mod. to strg. ser.» 48.2-76.1 wk. dol. {67.4-67.8} «qdv.» {69.5 70.6} «strg. silicification ser.» sil. 50%, ser. 35%.	48.2-76.1 tr. diss. py. 51.2-51.5 diss. py bands, wispy bands to 10%. {52.4-52.8} «10% diss. py. bands.» to 10% locally. {69.5-70.6} «3-5% diss. py. loc.» {67.4-67.8} «py. to 1% locally» 67.4 minor gouge.	44.2-45.4 stkwk. qtz. veins. 61.4-62.5 qtz. veining. 48.9-50.2 fragmented core. 53.6-57.3 fragmented core.
76.10 TO 78.20	«FLT GOUGE»	Lt. grey/green. Bx. Brecciated, strongly silicified fault zone and gouge. Parent rock not discernible. FOLIATION 76.4-77.1 flt. gouge. {77.1-77.6} «flt., bx. zone.» 77.6-78.2 flt. gouge.	70	{76.1-77.0} «strg. ser.» 30-35%. {77.0-78.2} «mod. fuch.» fuch. 20%.	{76.1-78.2} «py. strgrs., pods to 20% loc.» Py. occurs as stringers or in pods. Quite obviously late.	In places appears rather cherty.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
78.20 TO 83.90	«M XTAL T»	Lt. grey/green. Med. grained poorly competent mafic xtal. tuff. FOLIATION	75	78.2-83.5 weak ser. Ser. 10%. {83.5-83.9} «mod. ser.» {78.2-83.9} «strg. dol.» 50%.	{78.2-83.9} «tr. diss. py.»	
83.90 TO 87.80	«ALT ASH TUFF»	Lt. grey/green. Fine grained weakly competent ash tuff. FOLIATION {86.8-87.8} «flt. gouge.»	70	{83.9-87.8} «strg. ser.» 30%. {83.9-87.8} «strg. dol.» 55%. {83.9-87.8} «mod. rusty ser.» 15%.	{83.9-87.8} «tr. strgr. py.»	Core broken and fragmented for length of interval.
87.80 TO 140.10	«MLT»	Lt. green/grey to lt. grey. Med. to fine grained fairly competent lapilli tuff. FOLIATION {102.9-104.0} «flt., bx. gouge.» 105.0-105.1 flt. gouge. 106.4-106.5 flt. gouge. {108.1-111.4} «flt., bx. gouge.» 116.6-116.7 flt.gouge. 125.2-125.3 flt. gouge. 135.0-135.1 flt. gouge. {139.5-146.1} «flt. gouge. {102.9-140.1} «abundant gouge and flt., bx.»	75	{87.8-93.6} «strg. dol.» 60%. {87.8-93.6} «strg. ser.» 30%. Rusty ser. asso. common. {93.6-140.1} «strg. dol.» 70%. Trace fuchsite. {125.2-125.3} «10% fuch.» {135.9-140.1} «mod. ser.»	{87.8-104.0} «tr. to 5%» strgr. py. 104.0-108.2 2-5% stringer py. Upto 10% locally. 108.2-111.4 tr. py. 111.4-114.4 tr. 3% py. 114.4-116.6 3-8% py. {116.6-116.7} «25% py. in flt. gouge.» {116.7-120.9} «5% py.» {120.9-121.3} «10% py.» {121.3-122.6} «5% dissem. stringer py.» 122.6-125.2 tr. diss. py. {125.2-125.5} «10-15% py. stringers and pods» {125.5-140.1} «tr. 5% diss. py. locally to 10-15%»	Sharp contact at 93.6 between dolomitic and sericitic alt'n.
140.10 TO 153.90	«ARG»	Black. Fine grained black argillite interbedded with fine grained siltstone and wackes. BEDDING FOLIATION {140.1-145.0} «flt. gouge» dyritic. {153.7-153.9} «flt. gouge» END OF HOLE.	90 80		{140.1-153.9} «tr. diss. py.»	Possible cross bedding indicates tops down 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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22821	44.40	44.90	0.50	.006	.01	.01	1.8	.01							.05	.001							
BCD22824	61.90	62.60	0.70	.004	.01	.01	1.9	.01							.06	.001							
BCD22825	67.30	67.90	0.60	.015	.01	.01	1.9	.02							.06	.001							
BCD22751	68.60	69.00	0.40	.008	.01	.01	1.8	.01							.05	.001							
BCD22752	69.70	70.50	0.80	.014	.01	.01	2.2	.02							.06	.001							
BCD22753	77.00	77.50	0.50	.007	.02	.01	2.0	.01							.06	.001							
BCD22757	120.70	121.30	0.60	.004	.02	.01	1.7	.02							.05	.001							
BCD22758	121.80	122.70	0.90	.005	.01	.02	1.9	.01							.06	.001							
BCD22759	125.20	125.70	0.50	.003	.01	.01	2.0	.01							.06	.001							

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22819	16.50	18.60	2.10	38.11	13.55	11.01	8.53	2.53	.56	9.95	.18	1.71	.020		76	84			5	68	.9	50	.34				1	3
BCD22820	26.50	29.40	2.90	42.67	15.17	7.62	7.32	4.30	.13	10.22	.17	1.60	.010		97	87			5	18	.6	49	.29				1	1
BCD22822	45.30	48.10	2.80	44.45	15.36	7.05	7.32	4.30	.41	9.97	.17	1.58	.010		88	80			5	28	.5	51	.26				4	1
BCD22823	72.10	74.90	2.80	45.33	14.42	8.04	6.39	3.29	.32	9.91	.17	1.64	.010		101	95			5	31	.5	36	.28				1	1
BCD22754	78.30	81.20	2.90	36.91	9.49	9.34	14.07	.01	.01	10.11	.18	.92	.005		53	94			5	7	.8	61	.37				49	5
BCD22755	83.90	86.40	2.50	36.60	13.36	10.75	7.75	.17	3.04	9.37	.20	1.68	.050		83	82			5	43	.8	53	.32				7	7
BCD22756	97.80	100.90	3.10	41.11	13.09	7.63	10.68	2.21	.38	10.12	.17	1.46	.010		73	86			5	12	.7	57	.30				1	2
BCD22760	125.60	128.60	3.00	39.30	10.99	10.15	11.20	.83	.69	10.36	.39	.78	.010		50	102			5	16	.9	90	.35				7	10
BCD22761	150.80	153.40	2.60	60.63	14.74	1.21	2.91	.85	3.40	6.64	.06	.78	.060		38	105			5	47	.3	41	.12				28	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG285 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 105+75mW

PLOTTING COORDS GRID: MINE
NORTH: 773.00N
EAST: 10570.00W
ELEV: 1137.24

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

COLLAR DIP: -55° 0' 0"
LENGTH OF THE HOLE: 221.20m
START DEPTH: 0.00m
FINAL DEPTH: 221.20m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: August 26, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: SECOND HOLE ON SECTION 105+75mW, 50mN OF RG282, 7+40mN.

DIRECTIONAL DATA: UTM 2833.031E 70803.462N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
89.90	-	-54° 0'	ACID	OK		-	-	-	-	-	
119.80	-	-55° 0'	ACID	OK		-	-	-	-	-	
160.30	-	-55° 0'	ACID	OK		-	-	-	-	-	
190.80	-	-55° 0'	ACID	OK		-	-	-	-	-	
221.30	-	-55° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG285 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 30.40	«CASING»					
30.40 TO 32.00	«RUBBLE»					
32.00 TO 38.80	«SER CHERT/ ARG»	Yellow/brown. Fine grained. Fine grained, strongly folded/convoluted, foliated/schistoise/ sericitc chert/arg. FOLIATION/SCHISTOSITY 37.8 folding. -- 180 Core broken/fractured. Mod. to poorly comp.	85	{32.0-38.8} «v. strg. ser.» - 70%.	32.0-38.8 -- tr. diss. py. Occasional py. stringers along planes of foliation.	More arg. than chert. 37.0-37.1 -- minor shear fabric perpendicular core axis.
38.80 TO 56.20	«CHERT/ARG»	Dark grey to black. Fine grained, reasonably competent, tightly folded chert with chert arg. intbed. Fold axil plane -- 180. Orientation of original bedding variable due to folding. Bedding parallel foliation has beed folded. SECOND FOLIATION Possible F2 folding of F1. {42.9-44.1} «qvn.» {38.2-49.3} «chert» {49.3-53.6} «chert + arg.» {53.6-56.2} «chert» {53.0-56.2} «flt. gouge» - silicified.	85	{38.8-56.2} «qvns. may cause silicification» Occ. follows bedding.	{38.2-49.3} «2% py.» Mainly fine grained diss. Occ.stratiform stringers {49.3-53.6} «20% py» Lenticular, podiform. {53.6-56.2} «tr. 1% diss. py.» Tr. sphalerite.	Two stages of folding and foliation. Bedding parallel foliation folded by F1 event followed by F2 folding giving rise to S2 foliation perpendicular core angle.
56.20 TO 78.50	«DOLOMITIC SED»	Brown/green. Med. grained. Extremely faulted, brittle med. grained dolomitic seds. Faulting sub parallel to core axis. {56.2-56.8} «flt. gouge» {57.4-57.7} «flt. gouge» {64.2-65.8} «flt. gouge» {66.0-68.3} «flt. gouge» {70.6-70.7} «flt. gouge» {71.8-71.9} «flt. gouge» -- 160 {75.8-76.2} «flt. gouge» FOLIATION	85	{56.2-78.5} «strg. dolomitization» 60%. {56.2-78.5} «mod. to strg. ser.» 25%. Tr. fuch.	{56.2-78.5} «tr. 2% py.» {68.5-68.6} «tr. gn., tr. cpy.» py. 25% {59.2} «15% gn.»	Sulphides generally finely diss. throughout except in proximity of fault zones and silicification, then upto 25%
78.50 TO 93.20	«CHERT»	Grey to black. Fine grained. Moderately competent due to intense silicification. Convoluted fold axial plane. -- 180. Tension gashes. -- 100 {81.0-84.3} «extreme silicification due to qvn» Auto brecciation.	80	{78.5-93.2} «extreme silicification» Tr. fuchsite.	78.5-85.8 tr. diss. py. 85.8-88.2 1% diss. py. occ.stratabound. {88.4} «semi massive py. clast» Approx. 3cm to 5cm. {89.8-93.2} «15% diss. py., locally banded»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		{85.4-85.8} «qvn» FOLIATION {83.8-83.9} «flt. gouge» {92.3-93.0} «flt. gouge»	80		Disseminated in matrix, also forming stratiform/stratabound semi massive beds.	
93.20 TO 102.20	«DOLOMITIC SEDS»	Yellow/grey. Med. grained. Poorly competent from 93.2-95.5, fairly competent from 95.5-102.2. FOLIATED Defined by rusty brown sericite. {93.2} «flt. gouge» {97.9} «flt. gouge» {101.9-102.2} «flt. gouge»	75	{93.2-95.5} «strg. dol., ser.» Trace fuchsite. {99.4-102.2} «strg. dol.» Trace fuch.	{93.2-95.5} «upto 20% py. in pods and veins» {99.4-101.9} «upto 20% py., tr. cpy., tr. gn.» {101.9-102.2} «semi massive py.,tr.gn.»	
102.20 TO 131.10	«SER CHERT/ ARG»	Yellow/brown. Med. to fine grained. Brittle foliated/schistose highly convoluted/folded sericitic chert/arg., with interbeds of graphitic seds S2 FOLIATION S1 FOLIATION UNKNOWN F1 folds perpendicular core axis. F2 folds parallel core axis. {102.5-103.1} «flt. gouge» {106.4-106.6} «flt. gouge» 114.5-115.6 - qtz. vein.	80	{102.2-131.1} «very strg. ser.» Qtz. flooding, but weak silicification.	102.2-131.1 -- trace py.	106.6-111.1 -- graphitic intbed. 116.7-117.8 -- interbeds of graphitic. 120.0-122.0 -- intbeds. of graph. seds. 125.7-126.5 -- intbeds. of graph. seds. 128.9 -- broken core.
131.10 TO 147.20	«CHERT»	Dark grey to black. Fine grained. Fairly competent tightly folded with spaced cleavage/foliation FOLD AXIAL PLANE {135.0-135.1} «qvn.» {143.4} «flt. gouge» {147.2} «flt. gouge»	85 90	{135.0-141.5} «very strg. silicification.» Trace fuch.	{131.1-135.0} «2% py.» Occ. as pods or lenses, and stringers. {139.6-141.0} «1-2% folded stratiform py.» Post silicification. {142.6-143.4} «10% podi form lensoidal fine grained py.»	
147.20 TO 166.20	«DOLOMITIC SEDS»	Yellowish/grey/brown. Med. to coarse grained. Moderately competent med. to coarse grained with FOLIATION {147.2} «flt. gouge, qtz. vein» {152.7} «minor flt. gouge» {157.1-157.4} «flt. gouge» {159.6} «small shear» {160.3-160.6} «sheared» {161.4-161.7} «flt. gouge»	85	{147.2-157.2} «mod. dol., ser.» Ser. occurs along foliations. Trace fuch. {157.2-166.2} «mod. dol., strg. ser.»	{147.2-147.3} «25% semi massive py. in qtz. vein» 147.3-151.0 -- trace py. {151.0-151.1} «25-30% coarse grained py trace sp.» 151.1-156.9 -- trace py. {156.9-157.0} «10% fine grained diss. py.» {157.2-157.3} «semi massive in fault zone» {157.3-166.2} «trace py.,locally to 10% coarse grained euhedral»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
166.20 TO 169.60	«CHERT/ARG»	Black. Fine grained. Tightly folded, often ptygmatically fine grained chert/arg. FOLIATION FOLD AXIAL PLANE -- 180 {168.8-169.2} «sheared» Foliation superimposed on earlier bedding parallel foliation.	 70 90	{166.2-169.6} «mod. silicification»	{168.8-169.8} «15-20% fine grained stratiform py.» {169.7-169.8} «semi massive py.»	
169.60 TO 172.00	«CHERT»	Black. Fine grained. Tightly folded, often ptygmatically, fine grained chert. FOLIATION Superimposed on earlier bedding parallel foliation	 70	{169.6-172.0} «strg. silicification»	{169.8} «semi massive py. vein» {171.5} «semi massive py. vein»	
172.00 TO 176.80	«CHERT/ARG»	Black. Fine grained. See previous description. FOLIATION	 85		{172.0-175.3} «upto 10% fine grained folded stratiform py.» {175.3-175.4} «sulphide vein, trace gn. cpy., sp.»	Very common ptygmatic folds. 175.5-176.8 -- broken core.
176.80 TO 185.60	«DOLOMITIC SEDIMENTS»	Brown/grey. Med. to coarse grained. Extremely faulted and brecciated. FOLIATION {176.8-179.3} «competent» {179.3-185.6} «flt. gouge and bx.»	 80	{176.8-179.3} «mod. to strg. dol., weak ser.» Trace fuch.	{176.8-179.3} «upto 15% fine grained sulphide lenses and coarse grained diss py.» {179.3-185.6} «diss.py. in fualt gouge»	
185.60 TO 194.80	«SILICIFIED ARGILITE»	Dark grey to black. Fine grained. Convoluted, competent where not faulted, sheared in place. {185.6-185.9} «sheared» FOLIATION {187.9-189.0} «intbed. of dol. seds» CONTACT {185.9-194.8} «flt. gouge and shearing with occ. short unsheared, faulted sections» {194.8} «flt. contact»	 80 75 10 10	{185.6-194.8} «strg. silicification where unsheared/unfaulted» {187.9-189.0} «strg. dol., ser.»	185.6-194.8 -- trace diss. py.	
194.80 TO 201.30	«SER LAPILLI TUFF»	Yellow/brown/green. Coarse grained. Competent coarse grained lappilli tuff. FOLIATION Lapillis flattened in same orientation as foliation. {198.2} «flt. gouge» {199.7-200.8} «flt gouge and bx.»	 75	{194.8-201.3} «very strg. ser.» Weak dol.	194.8-198.2 -- trace fine grained py. Usually interstitially and forming pods {198.2-198.3} «podiform sulphide, trace gn., trace cpy., assoc. with qtz. vein»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
201.30 TO 204.40	«CHERT/ARG»	Black. Fine grained. Incompetent faulted, fractured and sheared. Pervasive shearing throughout length. Possibly sinuous vertical fault approx.-- 170-190. {204.4} «contact»	70	{204.1-204.2} «silicification»	{203.3} «sulphide vn.(?) coarse to fine grained euhedral to anhedral py.» {204.1-204.2} «finely diss. sulphide vein, trace gn.» Assoc. with silicification. {204.3-204.4} «2-3%py.»	
204.40 TO 209.10	«SER LAPILLI TUFF»	Yellow/brown/green. Coarse grained. Incompetent faulted fractured, sheared. {207.0-207.4} «vert fault gouge» SHEAR FOLIATION	70 75	{204.4-209.1} «strg. ser.» Weak dol.	204.4-209.1 -- trace py.	This unit may be faulted. May be same as unit from 194.8-201.3.
209.10 TO 211.30	«CHERT/ARG»	Black. Fine grained. Very incompetent, sujected to sinuous faulting along core axis. Fault -- 170 to 190. {209.1-211.3} «primarily faulted, sheared, with occasional competent sections»		{209.2-209.8} «strg. silicification» {210.7-210.9} «strg. silicification»	Trace py.	
211.30 TO 217.70	«DOLOMITIC SEDS»	Grey/brown. Med. grained. Competent when unfaulted, medium grained faulted dolomitic seds. {211.6-211.7} «flt gouge» {212.0-212.1} «flt. gouge» {212.7} «small shear» {213.1-213.4} «flt. gouge» {214.2-214.7} «flt. gouge» {215.3-215.7} «flt. gouge» {216.1-216.5} «flt. gouge» {216.8-217.7} «flt. gouge»	70 80	{211.3-217.7} «mod. dol., weak ser.»	211.3-211.6 -- trace 1% py. {212.8-213.1} «1-2% gn. stringers, sp.» {213.11-217.7} «trace-2% diss. py.»	
217.70 TO 219.50	«CHERT/ARG BX»	Black. Fine grained. Incompetent fine grained, fractured and sheared chert/arg. {217.7-217.8} «flt. gouge» {219.0-219.5} «flt. gouge» Brecciated. FOLIATION	85	{217.7-219.5} «mod. silicification»	Trace sulphides in brecciated clasts.	
219.50 TO 221.20	«DOLOMITIC SEDIMENT BX»	Grey/green. Med. to coarse grained. Very incompetent strongly fractured, faulted, sheared. Shear fabric -- 170 to 190. {219.5-221.2} «flt. gouge» END OF HOLE		{219.5-221.2} «mod. dol.»	219.4-221.2 -- trace fine grained sulphides in bx'd. matrix.	Too short an interval and too bx'd. to get info. from 221.2.

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD21834	49.60	50.80	1.20	.010	.01	.01	0.3	.05															
BCD21835	61.60	62.10	0.50	.052	1.40	.38	6.2	.17															
BCD21836	68.20	68.60	0.40	.080	.59	.09	1.0	.04															
BCD21839	88.30	88.50	0.20	.002	.02	.01	1.7	.15															
BCD21840	89.70	90.00	0.30	.001	.01	.01	0.2	.09															
BCD21842	99.30	99.90	0.60	.012	.06	.03	1.8	.09															
BCD21843	100.90	101.50	0.60	.008	.01	.01	0.9	.17															
BCD21844	101.50	102.70	1.20	.034	1.37	.58	10.2	.39															
BCD21847	142.60	143.40	0.80	.003	.24	.02	0.9	.12															
BCD21849	156.70	157.60	0.90	.007	.02	.01	0.2	.02															
BCD21802	175.20	175.50	0.30	.168	.68	.50	2.4	.06															
BCD21806	198.20	198.50	0.30	.652	1.22	1.93	15.8	.05															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD21832	35.40	38.20	2.80	56.34	17.96	.43	3.20	.45	4.61	7.43	.31	.80			47	103					.1	63	.11					
BCD21833	44.10	47.80	3.70	75.90	6.80	1.75	.50	.11	1.87	5.26	.02	.86			177	457					.9	85	.10					
BCD21837	69.20	72.70	3.50	42.36	12.00	10.09	6.27	.66	2.88	7.80	.36	1.10			107	721					1.0	214	.33					
BCD21838	84.10	87.30	3.20	84.72	2.31	2.95	1.31	.01	.46	2.86	.05	.23			46	91					1.8	42	.12					
BCD21841	95.10	98.10	3.00	46.02	11.66	6.99	5.16	.34	2.46	11.15	.38	1.04			267	2106					.1	737	.30					
BCD21845	108.90	111.90	3.00	59.94	14.19	.17	2.77	.44	3.98	7.93	.47	.60			51	110					.1	55	.13					
BCD21846	139.50	142.20	2.70	86.16	5.22	.08	.29	.18	1.62	2.73	.01	.26			15	46					1.3	32	.04					
BCD21848	148.90	151.90	3.00	33.34	11.12	12.04	8.29	.82	1.82	9.32	.43	.98			112	770					.6	217	.36					
BCD21850	166.40	168.80	2.40	55.66	11.47	5.66	4.25	.64	2.80	5.67	.35	.58			58	95					.3	64	.20					
BCD21807	169.60	172.00	2.40																									
BCD21801	172.00	174.90	2.90	61.24	13.81	.68	1.42	.67	3.65	8.09	.17	.83			82	99					1.2	54	.11					
BCD21803	176.80	179.30	2.50	43.65	10.11	7.19	7.89	.61	1.42	10.22	.51	.99	.065		53	354		87.09	15	108	1.2	405	.32				253	7
BCD21804	189.60	192.30	2.70	48.19	5.36	11.88	7.06	.50	.69	5.59	.26	.50	.040		49	1328		81.92	9	50	1.7	991	.33				23	7
BCD21805	195.30	198.00	2.70	40.23	11.91	8.11	10.16	.38	.81	10.30	.27	1.12	.080		95	284		85.18	30	66	1.1	185	.33				154	1
BCD21806	198.00	200.70	2.70																									
BCD21807	200.70	203.40	2.70	82.51	3.71	1.69	.48	.10	.75	3.49	.03	.28	.055		50	384		87.88	5	200	.4	63	.08				117	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG286 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 109+20mW SECTION

PLOTTING COORDS GRID: MINE
NORTH: 454.00N
EAST: 10950.00W
ELEV: 1048.12

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 184.40m
START DEPTH: 0.00m
FINAL DEPTH: 184.40m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: August 17, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX. CAMP

PURPOSE: STRATIGRAPHIC HOLE ON REA ZONE AT 109+20mW SECTION4+20mN.

DIRECTIONAL DATA: UTM'S 2338.68 mE 70794.49 mN

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
32.00	-	-49° 0'	ACID	OK		-	-	-	-	-	
74.70	-	-50° 0'	ACID	OK		-	-	-	-	-	
105.20	-	-49° 0'	ACID	OK		-	-	-	-	-	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG286 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 19.00	«CASING»					
19.00 TO 47.90	«MLT»	Med. to dark green. Fine grained matrix, lapilli-clasts. Fine grained mafic lapilli tuff. Abundant qtz. veining upto 40%. FOLIATION {23.3-23.4} «flt. gouge» {40.5-40.6} «flt. gouge» {46.7-46.8} «flt. gouge»	85	19.-36.3 weak ser. dol. {36.3-37.} «strg ser.» Ser. to 35%. 37.-47.9 chlolitic. {37.8-38.7} «strg. ser.»	{19.0-47.9} «1-2% py. with local variations upto 10%» {38.-38.4} «tr. to 2% py., tr. gn.,cpy» Contained in qvn. {40.8-40.9} «5-10% py., tr. gn.»	Py. occurs dissem. or as stringers. Also occcur as pods of fine grained aggregates.
47.90 TO 51.10	«QVN»	White to yellow/brown. Massive, weakly broken qvn	80	{47.9-48.4} «strg. ser.» {49.-53.} «strg. ser.» 60%.	{47.9-53.} «15% strgr. py.» {48.7-49.4} «10-15% py., tr. gn., tr. sp.»	Occurs primarily as stringers sulphide, but also disseminated.
51.10 TO 54.40	«ALT M XTAL T»	Grey/green. Fine grained. Fairly competent fine grained, sericitized mafic xtal. tuff. Weak foliation.	85	{53.0-54.4} «strg. ser.» 70%.	{53.0-54.4} «10% py.» {54.1-54.2} «qvn. with 60% py., tr. gn»	Py. as stringer and podiform sulphides. This unit may be altered due to contact with previous qvn.
54.40 TO 76.30	«M XTAL T»	Med. to dark green. Fine to med. grained. Generally competent, locally incompetent, fine to medium grained xtal. tuff. Foliation defined by alignment of chl. Roughly paralleled by interbeds (few) of m. ash tuff. {54.4-76.3} «abundant qtz. veins»	80	{63.6-63.7} «strg. ser.» 50%. {65.5-67.2} «strg. ser.» 30%. {75.9-76.3} «strg. ser.»	{54.4-76.3} «tr. diss. py.» {75.9-76.3} «10% strgr. py.»	54.4-76.3 abundant qtz. veins. 65.9-70. vertical qtz. veins.
76.30 TO 82.90	«MAT»	Med. to dark green. Fine grained. Competent fine grained mafic ash tuff. Foliation defined by alignement of plately chl. BEDDING	85 75	76.3-82.9 weak ser.	{76.3-82.9} «tr. diss. py.»	76.3-82.9 qtz. veins, but roughly only 1%.
82.90 TO 87.60	«MLT»	Med. to dark green. Fine grained matrix with lapilli sized clasts. Competent fine grained mafic lapilli tuff. FOLIATION	85	82.9-87.6 very weak spotty sericitic.	82.9-87.6 weak tr. diss. py.	Fairly nondescript alt. {83.8-83.9} «qvn.»
87.60 TO 91.80	«FAULTED M INT»	Med. to dark green. Gouge and rubble. Moderately competent but broken and faulted mafic intrusive with an original porphyritic texture. {87.6-88.3} «flt.» {88.3-89.7} «rubble» {89.7-90.4} «flt.» {90.4-91.2} «rubble» {91.2-91.8} «flt.»		{87.6-91.8} «very weak fuch.» 87.6-91.8 weak rusty ser.	{87.6-87.9} «weak diss. py. in gouge»	Fault brings in mafic int.

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG286 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		Possibly fault at high angle to core undulating in and out. SHEAR FABRIC -- 110 FOLIATION Relative motion appears sinestral.	85			
91.80 TO 96.70	«M INT»	Dark green. Med. grained. Competent but rubbly med. grained mafic intrusive with flattened porphyries. FOLIATION SHEAR FABRIC -- 120	85	91.8-96.7 weak sericite.		No discernible mineralization.
96.70 TO 98.10	«SHEAR ZONE»	Grey/green. Variable. Comminuted, sheared texture with gouge over .1m intervals at each end of zone. ANASTOMOSING SHEAR FABRIC	70	{96.7-98.1} «strg. fuch.» 30-35%. {96.7-98.1} «mod. to strg. ser.» 25-30%	{96.7-98.1} «tr. diss. py. in gouge» {96.8-97.9} «3% py. as stringers along shear fabric.»	Possibly oriented along core axis. Appears to undulate in and out.
98.10 TO 102.30	«ALT MLT»	Green/grey. Fine grained with lapilli. Fairly competent, but faulted locally, altered lapilli tuff. FOLIATION {99.0-100.0} «minor faults and gouge.»	80	{98.1-102.3} «strg. dol.» 60%. {98.1-102.3} «mod. fuch.» 20%. Weak ser.	{98.1-102.3} «5-10% stringer and diss. py.»	
102.30 TO 113.50	«QDV»	Lt. grey. Med. grained. Competent weakly foliated qdv. FOLIATION Possibly extremely dolomitized xtal. tuff. {104.5-104.6} «flt. gouge» {109.7-110.0} «flt. gouge» {110.6-110.8} «flt. gouge» {111.5-111.6} «flt. gouge» {113.2-113.7} «flt. gouge» {111.8-112.0} «semi massive py. vn.»	85 90	{102.3-113.5} «strg. dol. 80%» Weak ser., tr. fuch.	{102.3-111.8} «5-10% py. stringers, lenses» {111.8-112.0} «semi massive py. vn.» {112.0-113.5} «3% py. stringers diss.» {104.8-104.9} «py. pods, 20t.» Appears as late phase replacement.	Transitional bdy. to alt. down hole. 103.7-103.8 rubbly. 112.-112.3 rubbly.
113.50 TO 144.70	«MLT»	Grey/green. Fine grained with lapilli. Generally competent, but core is occasionally rubbly. FOLIATION {113.2-113.7} «flt. gouge» {118.2-118.7} «flt. gouge» {130.2-130.3} «flt. gouge» {136.1-136.9} «flt. gouge» {137.3-137.5} «flt. gouge» {140.9-141.0} «flt. gouge» {142.1-142.7} «flt. gouge» 144.7 contact with following unit.	85 15	{113.5-144.7} «weak to mod. ser., 15%» {113.5-144.7} «weak to mod. dol., 10%» Trace fuch.	{113.5-144.7} «3-5% diss. py.» {115.0-115.1} «5-8% stringer py.» {116.7-117.1} «5-8% py. lenses, stringers» {138.2-138.4} «2-5% diss. py.»	117.8-118. rubbly. 119.7-122.4 broken core. 129.4-130.2 broken core. 134.7-134.9 broken core. 144.7 contact with following unit.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
144.70 TO 154.40	«ALT M XTAL T»	Grey/green. Med. grained. Competent med. grained altered mafic xtal. tuff. FOLIATION {149.9-150.0} «small shear zone» {152.7-152.8} «qvn.» 1% py. stringer.	75 75	{144.7-147.3} «tr. diss. py.» {147.3-147.9} «10% stringer py.» {151.7-152.1} «10-15% diss., stringer py.» {152.8-153.3} «10-15% diss., stringer py.»		
154.40 TO 167.30	«M PYRO»	Grey/green. Med. to coarse grained. Fairly competent med. to coarse grained mafic pyroclastics. FOLIATION {154.4-154.6} «flt. gouge» Mineralized. {166.9-167.3} «flt. gouge»	85	154.4-167.3 weak sericite. {154.4-167.3} «mod. dol.» 25%.	{154.4-167.3} «tr. diss. py.» {154.4-154.6} «1% py. in flt. gouge» {167.2-167.3} «1% py. in flt. gouge»	157.3-157.4 qvn. 161.2-161.3 qvn. 162.5 qvn.
167.30 TO 170.00	«FLT BX AND GOUGE»	Grey/green to black. Variable. Fault zone between mafics and sediments. Extremely incompetent.	85		{167.3-167.7} «15-20% diss. and stringer sulphides.	
170.00 TO 184.40	«INT BEDDED SILTSTONE ARGILLITE»	Grey to black. Fine grained, weakly competent interbedded siltstone and argillite. Foliation S0 (bedding) 110 F1 fold 140 {179.6-179.7} «flt. gouge» {180.8-180.9} «flt. gouge» {181.1-181.2} «flt. gouge» {181.8-182.6} «flt. gouge» END OF HOLE.			170.0-184.4 trace diss. py.	171.5-171.6 fractured, broken core. Grading indicates overturned unit.

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22763	37.80	38.50	0.70	.050	.31	.29	4.3	.002															
BCD22764	38.50	38.80	0.30	.012	.02	.03	2.3	.002															
BCD22765	38.80	40.00	1.20	.009	.01	.01	2.0	.001															
BCD22766	40.60	41.20	0.60	.026	.32	.23	2.1	.001															
BCD22768	48.70	43.80	1.10	.029	.48	.37	5.7	.017															
BCD22769	53.80	54.50	0.70	.028	.39	.18	3.8	.002															
BCD22772	75.80	76.40	0.60	.009	.01	.01	1.8	.001															
BCD22827	104.70	105.30	0.60	.009	.02	.01	1.2	.001															
BCD22829	111.60	112.20	0.60	.010	.01	.01	1.8	.004															
BCD22831	138.00	138.60	0.60	.008	.01	.01	2.3	.001															
BCD22833	147.40	148.00	0.60	.012	.09	.01	1.7	.001															
BCD22834	152.40	152.90	0.50	.012	.01	.01	1.6	.001															
BCD22836	161.00	161.50	0.50	.012	.01	.01	1.4	.001															
BCD22837	161.70	162.00	0.30	.018	.01	.01	2.0	.001															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22762	24.60	27.60	3.00																									
BCD22767	42.80	45.90	3.10																									
BCD22770	51.50	53.80	2.30																									
BCD22771	56.20	59.40	3.20																									
BCD22773	79.50	82.40	2.90																									
BCD22774	84.80	87.40	2.60																									
BCD22775	92.40	95.20	2.80																									
BCD22826	99.20	101.90	2.70																									
BCD22828	105.30	108.20	2.90																									
BCD22830	126.90	129.10	2.20																									
BCD22832	145.00	147.40	2.40																									
BCD22835	157.80	160.50	2.70																									
BCD22838	173.70	176.80	3.10																									

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG287 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 105+75 SECTION

PLOTTING COORDS GRID: MINE
NORTH: 683.00N
EAST: 10566.00W
ELEV: 1134.02

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 222.80m
START DEPTH: 0.00m
FINAL DEPTH: 222.80m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: August 24, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX CAMP.

PURPOSE: THIRD OF A FENCE OF HOLES ON 105+75mW SECTION. 50m STEP FORWARD (SOUTH) OF RG282.

DIRECTIONAL DATA: UTM 2775.053E 70718.837N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
59.70	-	-49° 0'	ACID	OK		-	-	-	-	-	
97.80	-	-50° 0'	ACID	OK		-	-	-	-	-	
132.60	-	-51° 0'	ACID	OK		-	-	-	-	-	
222.80	-	-54° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG287 DATE: 3-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 23.10	«CASING»					
23.10 TO 29.80	«RUBBLE»	Mixed mafic and qtz. vein boulders.				
29.80 TO 44.60	«SER CHT + ARG»	Yellow. Fine grained. Intensely sericitized (>50%) argillites and lesser cherts. Whisps of graphite remain. FOLIATION	85	{>50% ser} minor crosscutting qv/qs.	5-7% fine to med. grained py. dissem. and banded.	
44.60 TO 60.90	«SER CHT»	White to yellow. Fine grained. Sericitized chert with minor graphitic intervals(5-10cm). Alternating laminae of chert and fine layers of sericite. FOLIATION	85	«>25% ser»	{50.8-51.0} «mssx.» 65% py., 15% sph., 3% gn., 1% cpy. {52.0-52.7} «mssx.» 65% py., 10% sph., 5% gn., trace cpy.	Note: blackjack. Note: cliophane and blackjack.
60.90 TO 74.50	«DOL SED»	Grey to brown. Fine to med. grained. Very competent with marked absence of primary features. Pervasive rust brown sericite with quartz dolomite veins. FOLIATION	85	Strong pervasive dolomite and lesser qtz. assoc. with qdv.	«5-15% fine grained diss. py.»	Possibly a mafic protolith, but minor graphitic intervals (<10cm) exist.
74.50 TO 80.70	«SER CHT + ARG»	Yellow to grey. Fine grained. Moderately sericitized cherts and lesser argillites. Highly contorted laminae with axial planar cleavage breaking beds. FOLIATION	85	«>25% ser» 15% qv./qs.	«10-15% fine grained py.» laminae(<1cm) alternate with chert.	
80.70 TO 88.70	«CHT + ARG»	Black. Fine grained. Strongly contorted with minor brecciated intervals.		20% crosscutting qv. minor dolomite.	1-5% fine grained py.	
88.70 TO 90.20	«MIXED SER CHT + ARG»	Yellow with black bands. Fine grained. Weakly sericitized with strong graphitic interbedding. 20% qtz. veins.		«weak ser.»	{88.5-88.55} «mssx.» 70% py., 5% cpy., 5% gn., 5% sph. {89.3-89.4} «mssx.» 75% py., 5% cpy., 3% gn., 3% sph.	Note both mssx. intervals at edge of alteration interval.
90.20 TO 110.00	«SER CHT + ARG»	Yellow to grey. Fine grained. Dominantly sericitic cherts with lesser argillite. {96.-97.1} «blk. cht. + arg.» {97.9-98.6} «blk. cht. + arg.» {102.-102.6} «cht.»		«moderate ser.»	«10-15% fine grained py. bands» parallel to foliation. {104.7-110.} «15% py. bands»	Note rotation in foliation.

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG287 DATE: 6-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		FOLIATION	70			
110.00 TO 118.70	«CHT»	Black. Fine grained. Well laminated black cherts with highly folded intervals. Thin argillite laminae. 16% qtz. veins-broken.			«2-7% py. bands»	
		FOLIATION	78			
		Bedding 0deg. at 113.2m.				
118.70 TO 138.40	«DOL SEDS»	Grey to brown. Fine to med. grained. Intensely altered seds. Very competent with 10-12% late qtz.-dolomite veins pyrite rich zones.		Strong (>30%) rust brown sericite.	«>20% fine grained diss. py.»	1-2% fuchsite or talc (dark green)
		FOLIATION	70		{118.7-119.7} «30% py., tr. gn., sph., cpy.» assoc. with qdv.	
					{127.4-128.2} «30% py., tr. cpy.»	
					{135.3-138.4} «25% py., 3% sph., 1% cpy 2% gn.»	Associated with qtz. dol. veins. Semi massive.
138.40 TO 142.10	«CHT + ARG»	Black. Fine grained. Argillite and lesser inter laminated cherts. Strongly folded with axial planar shears. 5-10% qtz. veins.		Minor (<5%) sericite.	«10-15% py. bands folded»	
					{139.2-139.3} «smsx 19% cpy., 2% gn., tr. as.»	Vein related?
		FOLIATION	75			
142.10 TO 170.60	«CHT + ARG BX»	Black with yellow intervals. Variably altered and variably brecciated cherts and argillites. Broken and contorted laminar fabric.		Variable pervasive sericitization.	«5-10% py. bands»	
				{145.6-148.4} «>30% ser.»		
				{152.3-153.8} «>30% ser.»		
		FOLIATION	75			
		BEDDING at 155.1m	10			
		FOLIATION	85			Close to fold axis.
				{154.9-155.6} «>20% ser.»		
		{155.6-170.6} «strong bx.» minor mt. laminae.		Weaker sericite.		{160.6-163.9} «flt. gouge»
170.60 TO 178.00	«ALT MPYRO»	Pale green. Fine to med. grained. Sericitized mafic pyroclastic. Preferentially sericitized lapilli. Discrete interbeds of chert + arg.		«>25% ser.» Note rusty colour sericite at top of unit.		Abrupt 45deg. contact at top.
		FOLIATION	75			
		{173.3-175.5} «cht. + arg.» wll laminated.				
178.00 TO 190.90	«CHT + ARG»	Grey. Highly contorted and variably brecciated argillite and lesser chert. Interbeds of mt.			«10% py. bands» at base.	
		{181.1-186.3} «mt.»				
		{184.0-185.0} «mt.»				
190.90 TO 205.80	«SI STKWK»	Dark green. Fine grained. Generally composed of dark green massive chlorite and sulphides. Chlorite 60%. Sulphides 40%.		Strong (>60%) dark green chlorite.	{193.2-193.8} «30% py., tr. cp., sph»	
					{195.6-197.8} «smsx.» 75% py., 2% gn., 1% cpy., 3% sph.	Very fine grained sulphides.
						{200.8-201.3} «flt. gouge»
		FOLIATION	85		{201.3-204.6} «diss. py., gn., sph.» 20% total.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
					{204.6-205.8} «gn. tt. sph.» assoc. with qdv.	
205.80 TO 222.80	«MPYRO»	Green. Fine grained. Mafic lapilli tuffs at top grading into ash tuffs at base. FOLIATION Thrust fault at 210.6m, 10% qdv.-late. END OF HOLE	75	Sericite altered at top of interval.		

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22902	50.70	51.00	0.30	.102	1.43	2.57	22.1	.22															
BCD22903	52.00	52.70	0.70	.417	4.90	4.20	48.0	.41															
BCD22904	88.50	88.60	0.10	.846	1.23	2.40	19.4	.07															
BCD22905	89.30	89.70	0.40	.207	2.07	1.71	21.7	.27															
BCD22907	110.00	110.90	0.90	.094	.68	.30	4.5	.20															
BCD22909	118.70	119.50	0.80	.117	1.02	.39	6.0	.18															
BCD22911	128.00	128.40	0.40	.028	.03	.05	2.1	.45															
BCD22912	131.80	132.50	0.70	.014	.01	.02	0.5	.21															
BCD22913	134.00	135.30	1.30	.020	.05	.04	0.6	.07															
BCD22914	135.30	136.80	1.50	.028	.40	.24	2.2	.05															
BCD22915	136.80	138.30	1.50	.171	2.17	1.07	19.7	.19															
BCD22916	138.30	139.80	1.50	.022	.53	.24	2.6	.13															
BCD22918	192.00	192.30	0.30	.013	.09	.10	0.8	.02															
BCD22919	195.60	196.20	0.60	.110	4.05	.60	4.2	.02															
BCD22920	196.20	197.90	1.70	.142	2.06	.90	8.0	.01															
BCD22921	197.90	199.40	1.50	.062	.54	.38	3.2	.02															
BCD22922	201.90	203.30	1.40	.035	.08	.08	1.8	.01															
BCD22923	204.00	204.50	0.50	.040	.48	.18	2.9	.02															
BCD22924	204.50	205.90	1.40	.187	1.64	1.04	14.6	.02															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22901	39.50	42.50	3.00	60.13	15.03	.60	2.09	.38	4.24	6.68	.28	.67	.670		43	179		94.42	165	105	.1	164	.10				173	1
BCD22906	104.90	108.20	3.30	63.81	14.55	.38	1.50	.52	3.72	6.21	.25	.67	.210		83	97		95.85	5	159	.1	58	.09				80	1
BCD22908	110.90	114.10	3.20	84.26	5.73	.33	.40	.14	1.27	3.24	.01	.28	.135		32	73		98.63	65	222	.2	92	.04				335	1
BCD22910	120.00	123.00	3.00	39.26	11.48	8.46	6.90	.55	2.38	10.68	.52	1.05	.410		102	155		83.96	10	344	.4	80	.30				342	11
BCD22917	170.80	173.80	3.00	33.80	11.51	11.55	8.58	1.38	1.15	9.60	.18	1.17	.070		93	86		79.60	5	101	.8	73	.36				95	6
BCD22925	212.10	215.10	3.00	37.92	12.78	12.31	7.84	2.31	.89	10.14	.17	1.41	.055		63	85		88.67	5	261	.8	54	.34				41	1
BCD22926	217.90	220.90	3.00	40.44	13.85	10.28	7.60	3.34	.02	9.52	.15	1.37	.015		81	88		87.08	5	45	.7	44	.34				17	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG288 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 105+20mW SECTION

PLOTTING COORDS GRID: MINE
NORTH: 422.00N
EAST: 10522.00W
ELEV: 1135.63

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

COLLAR DIP: -70° 0' 0"
LENGTH OF THE HOLE: 236.20m
START DEPTH: 0.00m
FINAL DEPTH: 236.20m

COLLAR GRID AZIMUTH: 180° 0' 0"

COLLAR ASTRONOMIC AZIMUTH: 225° 0' 0"

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: August 22, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX CAMP

PURPOSE: STRATIGRAPHIC HOLE ON REA HORIZON AT 105+20mW, 3+90mN.

DIRECTIONAL DATA: UTM'S 2634.31mE 70495.03mN

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
38.10	-	-68° 0'	ACID	OK		-	-	-	-	-	
82.30	-	-66° 0'	ACID	OK		-	-	-	-	-	
83.80	-	-67° 0'	ACID	OK		-	-	-	-	-	
129.56	-	-67° 0'	ACID	OK		-	-	-	-	-	
166.10	-	0° 0'	ACID		failed	-	-	-	-	-	
202.70	-	-66° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 28.00	«CASING»					
28.00 TO 36.50	«MITALT»	Med. to dark green. Med. grained. Competent med. grained mafic crystal tuff. Foliation defined by alignment of fspar. laths	45	28-36.3 -- chloritic. 35.-36.5 -- weak ser. -5%.	28.-36.5 -- trace diss. py. and stringers.	28.-36.5 -- minor qtz. veins and veinlets.
36.50 TO 38.00	«DOL QTZ VEINED ASH TUFF»	Varying white to yellow brown. Fine grained to massive. Mafic ash tuff extremely veined by massive qtz. veins. Foliation folded by veinlet. {37.6-38.} «qdv.»	90 90	{36.5-37.6} «strong rusty ser.» - 50%. Trace fuchsite.	{36.6-37.6} «wispy py. bands and veinlets, trace gn.» {37.6-38.0} «pods of diss. py., trace gn., cpy.»	
38.00 TO 41.40	«SER ASH TUFF»	Yellowish/brown/grey. Fine grained. Competent fine grained mafic ash tuff with fine grained pyrite lamellae and stringers. FOLIATION	65	{38.0-40.6} «mod. sericite» {40.6-41.4} «strg. ser.» -- 50% {38.0-41.4} «mod. to strg. dol.»	{38.0-40.9} «trace - 1% py. lamellae» {40.9-41.4} «5% lenticular py.»	Mineralization again appears strongly relate to dol. ser.
41.40 TO 43.80	«QVN»	White. Massive. Competent massive dolomitic ser. qtz. vein containing brecciated fragments.		41.4-43.8 -- weak sericitic, dolomitic.	{41.5-43.8} «3% podiform,lenticular py»	
43.80 TO 60.60	«ALT XTALT»	Brownish green. Med. grained. Medium grained equant brittle brownish green altered mafic xtal tuff. Weakly foliated. {50.0-52.2} «flt. gouge»	60	{43.8-45.1} «strg. ser., dol.» - trace fuch. {45.1-60.6} «mod. ser., strg. dol.» - trace fuch.	{43.8-45.} «3% podiform, lent. py.»	45.1-45.3 -- broken core. 46.6-47.2 -- broken core.
60.60 TO 73.90	«MAFIC ASH TUFF»	Med. green. Fine grained. Fairly competent fine grained foliated mafic ash tuff. FOLIATION CRENULATION {71.6-72.2} «qdv.»	60 60	60.6-73.9 weak ser. dol. {71.6-72.2} «mod. dol., strg. ser.»	60.6-71.6 trace diss. py. {62.5} «20% diss. podiform py. assoc. with qtz. vein» {71.6-72.2} «5% py. veinlets»	Mineralization assoc. with dol.
73.90 TO 96.90	«MAFIC XTAL TUFF»	Green to brown/green. Med. grained. Fairly competent, locally rubbly, equant, weakly foliated. Locally altered mafic xtal tuff. {87.4-87.8} «flt. gouge» -- 160. {89.8-89.6} «flt. gouge» {89.6-92.9} «qtz. veinging»	60	73.9-96.9 -- weak dol., ser. {85.4-86.1} «strg. ser., dol. around qdv.» {83.2-85.2} «strg. ser.» {88.0-89.5} «strg. ser.» -- trace fuch.	73.9-96.9 1% diss. py. as stringer. Locally to 5%. {85.4-86.1} «podiform and veined py. to 20% locally» {88.0-89.5} «5% stringer py.» {89.6-92.9} «2% py. veinlets» {94.0-94.3} «semi massive fine grained pyritic matrix»	76.8-77.7 -- broken core. 79.0-82.3 -- broken core. 86.1-86.9 -- broken core. 89.6-92.9 -- broken core.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
96.90 TO 103.00	«ALT MAF»	Yellowish brown/green. Fine grained. Moderate competency, locally broken, fine grained, foliated sericitically altered mafic ash tuff. Foliation defined by alignment or flattened chloritic grains. {101.5-102.0} «flt. gouge and bx.» -- 170.	55	{96.9-103.0} «strg. ser.» weak dol.	96.9-103.0 trace diss. py. {102.2-102.3} «10% diss. py. assoc. with qtz. vein»	98.6-101.4 -- broken core.
103.00 TO 113.20	«M INTRUSIVE»	Dark green. Med. grained. Competent med. grained granoblastic with possibly original porphyritic texture. FOLIATION {107.4-107.5} «small shear» {108.8-108.9} «shear» -- 170 {113.1-113.2} «flt.» -- 170	45 70	{103.0-113.2} «strg. chl.»	Trace diss. py.	Possible flow.
113.20 TO 123.40	«MXTALT»	Med. greyish green. Med. grained. Competent med. grained, equant mafic xtal tuff. FOLIATION {114.9-115.0} «minor flt.» {119.8-119.9} «flt. gouge» {119.9-120.5} «tectonic bx.» {122.3} «flt. gouge» {123.4} «flt. gouge»	45	{115.0-120.0} «mod. ser.» {118.6-119.5} «qtz. flooding»	Trace diss. py.	115.8-116.6 interbed of mat.
123.40 TO 131.50	«ALT MAF»	Brown/green. Fine grained. fairly competent fine grained altered mafic ash fuff. {128.2-128.3} «flt. gouge»		{123.4-131.5} «stockwork, qtz. veins & veinlets» {126.8-131.5} «strg. ser.»	123.4-131.5 trace diss. py.	
131.50 TO 139.80	«MXTALT»	Med. to dark green. Med. grained. Competent med. grained equant mafic xtal tuff. FOLIATION	40	131.5-139.8 chloritic.	131.5-139.8 trace diss. py.	Fairly non-descript rock.
139.80 TO 143.40	«MAF»	Brownish green. Fine grained. Fairly competent, locally rubbly, fine grained foliated mafic ash tuff. FOLIATION	55	{140.7-141.0} «strg. ser.» {141.7-142.9} «mod. ser.» trace fuch.	{142.7-142.8} «3% locally py. in qtz. vein»	142.7-142.8 -- qtz. vein. 141.5-141.9 -- broken core.
143.40 TO 151.80	«MXTALT»	Med. green. Med. grained. Competent med. grained foliated mafic xtal tuff. Equant grains. FOLIATION Secondary alignment of flattened xtals. {149.1-149.2} qtz. vein -- 160.	60 85	Weak ser. {143.4-151.8} «mod. chl.» {150.6-151.8} «bleaching» trace fuchsite.	{149.1-149.2} «2% stringer py. in qtz. vein»	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG288 | DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
151.80 TO 158.60	«MLT MPYRO»	Med. to dark green. Fine grained matrix with occ. lapilli. Weakly competent rubbly, foliated mafic lapilli tuff. FOLIATION {154.5-154.6} «flt. gouge»	60	{156.2-158.6} «strg. dol.» 50-60%. {157.3-158.6} «abundant qtz. veining & flooding.»	{156.1-156.4} «coarse diss. py. in fine grained sulphide matrix» {157.3-158.6} «py. locally in semi massive pods.»	152.6 qtz. vein. Minor stockwork qtz. veins throughout.
158.60 TO 174.00	«ALT MAT»	Green to grey/green. Fine grained. Competent locally broken, fine grained occasional stkwk. qtz veins, altered mafic ash tuff. {165.5} «flt. gouge» {168.5-168.6} «flt. gouge»		{158.6-160.4} «weak to mod. ser.» {160.4-174.0} «very strg. dol,mod.ser.» 70% trace fuch.	{160.4-174.0} «2% diss. py. and stringers»	158.6-160.4 -- stkwk. qtz. veins. Some pyrite stringers ptygmatically folded. 165.4-165.8 -- very broken rock. Locally py. to 15%.
174.00 TO 179.20	«MPYRO» MLT	Dark grey/green. Med. grained. Competent med. grained with coarse grained lapilli. FOLIATION {177.7-178.6} «flt. gouge»	60	{174.0-179.2} «very strong dol., mod. to weak ser.»	{174.0-179.2} «trace diss. py. occ. stringer py.»	
179.20 TO 184.50	«MXTALT»	Dark grey/green. Fine grained. Moderately competent coarse grained crystals in fine grained matrix. FOLIATION {184.4-184.5} «flt. gouge»	30	{174.0-175.2} «mod. dol.»	{179.2-184.5} «upto 3% fine grained py. in matrix material»	May be a sediment.
184.50 TO 187.60	«MAT»	Dark grey/green. Fine grained. Competent fine grained mafic ash tuff. BEDDING FOLIATION {185.1-185.5} «bedded fine grained py.» {187.3-187.4} «bedded py.»	65 45 50	{184.5-187.6} «mod. to strg. dol. weak ser.» {185.8-187.6} «mod. ser.»	{185.1-185.5} «bedded fine grained py.» {184.5-187.6} «to 5% fine grained diss. py.» {187.3-187.4} «10% banded py.»	Again, appears sedimentary but difficult to tell.
187.60 TO 203.80	«MPYRO» MLT	Dark grey/green to yellow/green downhole. Med. grained. Moderately competent med. grained with coarse grained lapilli mafic pyroclastic. FOLIAITON {188.7-189.2} «flt. gouge» {194.1-194.2} «shear»	50 70	{187.6-203.8} «strg. dol.» «189.0-192.2» «mod. ser.» «201.0-203.8» «strg. ser.»	{187.6-194.0} «5-10% diss. py.» {188.2-188.4} «10% diss. py.» {191.3-191.8} «10% diss. py. stringers» {198.2-198.3} «15% podiform py.» {198.4-200.5} «10-15% fine grained banded diss. py.» {200.5-203.8} «1-2% diss. py.»	198.4-200.3 -- occasional graphitic interbeds.
203.80 TO 205.60	«ARG»	Black. Fine grained. Incompetent fine grained comminuted graphitic arg. {203.8-205.3} «flt. gouge»		{203.8-205.6} «extremely graphitic; qtz veined»	{203.8-205.6} «trace py.»	Faulted in.
205.60 TO 217.80	«MPYRO» MLT	Yellow/green. Fine grained with coarse lapilli & cherty clasts. FOLIATION {205.6-205.7} «flt. gouge» {213.5-217.8} «intbed with argillite»	50	{205.6-217.8} «very strg. ser.»	205.6-217.8 trace py.	206.1-206.3 -- chert.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		{217.7-217.8} «flt. gouge» {215.4-215.5} «flt. gouge»				
217.80 TO 236.20	«BEDDED ARGILLITE»	Black. Fine grained. Incompetent fine grained argillite interbedded with siltstone. {225.5-226.3} «flt. gouge» {225.2-230.0} «flt. gouge» S0 BEDDING S1 FOLIATION S2 FOLIATION END OF HOLE.	 60 55 5			Fining indicates tops downhole as do rip up clasts. Strong foliation at rt. angles to bedding indicate may be in high of fold. 219.3-219.8 -- broken core.

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22839	29.40	32.30	2.90	40.60	14.12	7.62	9.78	1.88	.01	11.27	.15	2.04	.010		69	112		88.10	10	18	1.1	47	.35				1	1
BCD22842	38.20	40.60	2.40	42.35	15.25	4.66	9.91	1.74	.84	10.46	.26	2.09	.040		68	207		89.65	5	28	1.0	80	.29				1	4
BCD22846	52.40	55.10	2.70	38.72	9.46	8.97	13.79	.01	.01	10.27	.38	.95	.005		53	102		84.69	5	8	1.3	67	.39				1	8
BCD22848	64.00	67.00	3.00	43.51	13.83	4.25	10.91	2.21	.01	10.99	.23	1.91	.005		68	165		89.07	5	6	.9	60	.32				1	1
BCD22849	74.20	77.10	2.90	39.34	9.92	8.13	13.75	.01	.01	11.01	.27	1.11	.005		39	123		85.29	5	9	1.0	62	.38				18	5
BCD22786	94.50	96.90	2.40	37.06	10.66	7.22	15.67	.01	.01	11.41	.28	1.08	.005		52	95		86.26	5	6	1.1	72	.39				31	3
BCD22787	102.00	103.20	1.20	42.79	15.45	5.04	9.53	3.91	.01	10.73	.16	1.60	.005		71	116		91.84	5	6	.9	57	.27				1	1
BCD22788	105.10	108.20	3.10	42.59	13.33	7.07	11.11	1.56	.01	10.86	.18	1.33	.005		67	99		89.14	5	7	.9	54	.31				1	1
BCD22789	115.80	118.60	2.80	40.46	12.07	8.18	12.73	.55	.01	11.02	.19	1.33	.005		60	150		88.01	10	25	1.0	67	.35				1	1
BCD22790	123.70	126.70	3.00	41.13	13.30	8.25	10.01	2.03	.01	10.79	.18	1.81	.005		81	96		88.44	5	26	.9	57	.33				1	1
BCD22791	134.40	137.40	3.00	36.23	11.92	15.17	7.92	1.74	.01	9.18	.17	1.32	.020		65	70		84.90	5	44	1.1	46	.37				1	1
BCD22792	140.30	142.40	2.10	39.85	11.90	8.56	11.49	1.52	.01	10.23	.25	1.37	.010		71	82		86.77	5	14	1.1	63	.35				1	3
BCD22793	144.50	147.50	3.00	38.41	12.61	12.45	8.15	1.64	.01	9.80	.16	1.38	.015		72	76		85.49	10	32	1.0	45	.34				1	1
BCD22794	151.80	154.20	2.40	39.30	14.35	8.24	8.87	1.58	.04	11.50	.18	1.71	.025		72	96		87.23	5	28	.9	54	.34				1	1
BCD22797	159.60	161.00	2.40	38.06	14.14	10.77	6.10	2.71	.01	11.24	.17	2.75	.015		45	119		86.60	5	21	.5	40	.33				1	1
BCD22798	174.40	177.20	2.80	34.74	12.10	12.88	5.84	3.61	.13	7.32	.19	1.11	.020		66	47		79.97	5	27	1.0	52	.31				63	8
BCD22799	179.20	181.40	2.20	33.55	12.21	13.27	6.26	4.15	.01	7.30	.19	1.06	.020		52	37		79.60	5	20	1.0	50	.33				35	7
BCD22826	185.60	187.60	2.00	33.44	10.52	13.09	6.87	2.88	.89	7.62	.22	1.47	.030		47	51		80.74	10	33	1.2	59	.32				82	11
BCD22829	199.60	202.60	3.00	43.24	15.03	6.46	4.66	3.57	1.58	9.22	.12	1.31	.070		127	100		89.44	5	70	1.4	45	.23				94	5
BCD22830	207.40	210.40	3.00	56.42	16.80	.78	4.55	.33	3.24	8.20	.26	.96	.120		43	102		92.51	5	65	.2	44	.14				4	1
BCD22831	232.60	235.60	3.00	56.96	16.70	1.08	3.04	1.21	3.38	7.03	.06	.86	.055		41	109		90.95	5	61	.2	39	.11				4	1

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22840	36.70	37.50	0.80	.016	.02	.03	3.7	.04							.11	.001							
BCD22841	37.50	38.00	0.50	.024	.32	.20	4.5	.02							.13	.001							
BCD22843	40.70	41.30	0.60	.012	.02	.01	2.5	.05							.07	.001							
BCD22844	41.50	42.50	1.00	.016	.10	.02	3.9	.09							.11	.003							
BCD22845	42.90	43.80	0.90	.014	.24	.10	4.0	.03							.12	.001							
BCD22847	62.40	62.60	0.20	.009	.05	.03	2.2	.01							.06	.001							
BCD22850	83.50	84.40	0.90	.030	.12	.01	2.3	.03							.07	.001							
BCD22785	85.40	96.00	0.60	.014	.03	.01	2.6	.03							.08	.001							
BCD22795	156.00	156.50	0.50	.012	.01	.01	4.0	.01							.12	.001							
BCD22796	157.60	158.40	0.80	.004	.02	.01	2.2	.01							.06	.001							
BCD22800	185.10	185.50	0.40	.004	.01	.01	2.1	.02							.06	.001							
BCD22827	188.20	188.70	0.50	.005	.01	.02	4.0	.03							.12	.001							
BCD22828	191.20	192.20	1.00	.008	.01	.01	3.8	.02							.11	.001							

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 105+20mW

PLOTTING COORDS GRID: MINE
NORTH: 700.00N
EAST: 10521.00W
ELEV: 1147.97

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 276.10m
START DEPTH: 0.00m
FINAL DEPTH: 276.10m

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

DATE STARTED: August 26, 1989
DATE COMPLETED: September 1, 1989
DATE LOGGED: September 1, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX CAMP

PURPOSE: FIRST HOLE ON SECTION 105+20mW, "266 ZONE"

DIRECTIONAL DATA: UTM 2825.593E 70705.575N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
53.60	-	-49° 0'	ACID	OK		-	-	-	-	-	
123.70	-	-49° 0'	ACID	OK		-	-	-	-	-	
158.80	-	0° 0'	ACID		FAILED	-	-	-	-	-	
222.50	-	-49° 0'	ACID	OK		-	-	-	-	-	
276.10	-	-47° 0'	ACID	OK		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 43.90	«CASING»					
43.90 TO 47.50	«RUBBLE»	Predominantly sericitic chert and qtz. vein material, broken core subcrop?				{43.9-47.5} «10% recovery»
47.50 TO 66.70	«SER CHT + ARG»	Lt. grey. Tectonically churned-up laminated chert with lesser sericitized argillaceous material. Moderately foliated. Cut by 10% white bally qtz. veinlets (1-3cm) at tandorm orientations.	60	Pervasive silicification with patches of pale yellow sericitization restricted to the argillaceous portions.	Wisps and stringers of fine grained py. Overall avg. 3% py. Local concentrations and one speck of gn. and cpy. observed. {53.5-66.7} «4% py., trace gn., trace cpy.»	{65.7-68.9} «zislatch, .2m rec.»
66.70 TO 70.40	«CHERT»	Lt. to dark grey. Fine grained. Fairly massive with a hazy network of white siliceous veinlets. Possibly "sweats". Also thin irregular graphitic partings.			Trace pyrite.	
70.40 TO 74.70	«ARG + CHERT»	Black. Fine grained. Very thinly laminated black argillite and dark grey chert. Intensely contorted. FOLIATION (avg.)	40		Argillaceous laminae contain finely dissem. py. euhedra. Overall 2%.	Possible "S-folds" showing vergence to the north?
74.70 TO 78.70	«CHERT»	Lt. to dark grey. As from 66.7-70.4, but with clots of py. in argillaceous wisps. Chert appears to have been recrystallized into fine sugary texture. From 76.0-76.6, coarse blebs of py. (25%) occur in argillaceous chert.			2-5% py. except {76.0-76.7} «sms., 25% pyrite»	
78.70 TO 80.10	«MSSX» MASSIVE PYRITE	Metallic yellow. Med. to coarse grained. Gradational upper contact with increasing pyrite content in 1-5mm blebs, increasing until pyrite comprises 80% of rock. Lower contact interbanded. Avg. FOLIATION Gangue consists of qtz. and minor argillaceous material. Hcl indicates some fine grained sph. with interstitial mat'l.	70		{78.7-80.1} «65% pyrite, 2% sph., trace gal.» Sulphides occur in subrounded grains up to 7mm, first widely dissem. then close packed.	
80.10 TO 87.00	«CHT + ARG»	Grey to black. Fine grained. Predominantly chert contorted and partially recrystallized with argillaceous bands, seams and wisps containing diss. py. Avg. FOLIATION	65		Overall 2-3% py. restricted to argill. portions. Disseminated euhedra 3-4mm. Also 1-2% sphalerite lt. brown variety.	{84.0-84.1} «fault gouge at 65deg. ca.»

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
87.00 TO 92.60	«SER CHERT + ARG»	Grey, green/grey. Fine grained. Same contorted chert with lesser interlaminated argillite now sericitized. At 87.4m a short interval of black lam. argillite at a «fault gouge» {87.7-87.8} At 91.3m FOLIATION Lower contact faulted. {92.5-92.6} «fault gouge»	55	Argillaceous material now completely sericitized to olive green.	2-3% dissem., fine grained py. in ser. and also sparsely and evenly dissem. within some silty (?) portions lending a speckled appearance. (ie. from 89.7-90.1 and from 92.1-92.6).	Broken drill rod with loss of 1.5m of core from 85.5-87.0. Core recovered is badly broken.
92.60 TO 97.20	«CHT + ARG»	Grey to dark grey. Thinly bedded chert (5-20mm) and subordinate laminated black argillite, contorted at all orientations.		After the faulted upper contact sericitization is absent, it reappears, but is very weak in patches from 93.8-97.2.		
97.20 TO 104.00	«ARG + CHT»	Black to dark grey. Fine grained. Predominantly black argillite with lesser chert bands. Well developed FOLIATION	60	Only slight sericite development along selective bands of argillite.	1-2% pyrite.	
104.00 TO 134.10	«SER CHERT + ARG»	Grey to olive green. Gradational colour change, along with increase in proportion of chert. Still contorted with occasional imbricate structure; brittle deformation when laminations are perpendicular to foliation. FOLIATION Few widely spaced white bully qtz./dol. veins upto 20cm. No sx.	65	Weak to mod. sericite development increasing downhole. Patches of chert/argillite still unaltered remaining. At 124.0m the alteration intersifies in some 300mm thick siltstone beds.	1-2% pyrite only except {130.3-131.0} «5% pyrite» where a local sericite intensification occurs.	{132.1-134.1} «50% recovery, mislatch»
134.10 TO 175.10	«DOL SEDS»	Rusty brown to grey. Fine grained. Banded rock consisting of iron stained sericite rich laminae and dark grey ferrodolomite bands. FOLIATION at 136.8 Which also parallels the compositional banding. Rock is strongly foliated and no original textures are preserved.	60	20-30% of unit consists of rusty sericite concentrated in compositional bands alternating with dark grey dolomite +,- qtz. bands. Traces of bright green talc (rare).	Pyrite occurs as coarse disseminations in dolomite bands. Most intense near contact: {134.1-135.6} «15% py.» But weakening downhole avg. 3-5% py. except {163.5-165.0} «20% py.»	Qtz. vein, white, bully 172.1-172.3 at 45deg. core axis.
175.10 TO 178.80	«CHERT»	Dark grey. Fine grained. Gradational contact with appearance of argillaceous material followed by increase in qtz. content and decrease in dolomite. Predominantly grey chert with black arillaceous laminations. FOLIATION	65	Sericitite alteration gradually ceases at 175.1, revealing black argillite as the apparent precurser to the sericite bands in the dol. seds.	2-3% py. assoc. with black argill. Except {177.6-178.8} «15% py.» in a silicified interval.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
178.80 TO 183.50	«SER ARG + CHERT»	Light to dark grey. Fine grained. Predominantly strongly foliated to schistose argillite with fabric perpendicular to axis. Subordinate cherty bands are partially recrystallized and contain minor dolomite.	90	Sericitization occurs in patches from 178.8-179.1, 179.4-181.6, 182.2-183.5.	2-3% dissem. py.	
183.50 TO 193.00	«ARG + CHT»	Black to dark grey. Fine grained. Black laminated argillite, contorted, and foliated from 70deg to 90deg. to core axis.		Minor sneak sericite over short intervals.	1-2% dissem. py.	
193.00 TO 211.80	«ARG + CHT BX»	Black matrix with grey clasts. Fine grained. Broken cherty laminae in an argillaceous matrix. Foliation where present, at Graphite present on numerous partings.	60	Silicified from 208.5-211.8m, cut by stockwork qtz. veinlets.	1-2% dissem. py.	Core is very broken.
211.80 TO 214.20	«DOL ARG + CHERT»	Pale grey to olive drab. Fine grained. Abrubt colour change to bleached out, foliated, sericitized argillite, with chert fragments.		Dolomite flooded with black argillite completely bleached out and sericitized	1% very finely dissem. py.	Similiar to alt. mpyrc. in RG287, zeolite(?) in white veinlets.
214.20 TO 225.00	«ARG + CHT»	Black. Fine grained. Abrubt return to black argillite corresponding to disappearance of dolomitization. FOLIATION at 217.0 Sharp lower contact at 60deg.	75	Minor local silicification assoc. with thin qtz. veinlets.	1-2% py.	
225.00 TO 235.40	«CHLOR XTAL TUFF»	Light to dark green. Fine to med. grained. Green chloritic unit with coarse sand size clastic grains (xtals?). Sulphides are finely disseminated in patches with dark chlorite.		Chloritized.	225.0-225.9--2% py. {225.9-227.2} «smsx., 15% py., 3% gal., 1% sph.» 227.2-228.2-4% py., 1% gal., trace sph. 232-233.5--7% py. 233.5-235.0--8% py., 1% gal., trace sph.	
235.40 TO 245.00	«DOL MAF LAP TUFF»	Dark green. Upto 3cm clasts. Lapilli size clasts of lighter colour in a chloritic matrix. Stretching only minor at 65deg. parallel to: FOLIATION	65	Weak dolomitization increasing downhole At the 238.0 the bleaching dol. intensifies, assoc. with stockwork dolomite-qtz. veinlets. Lapilli are sericitized dolomitization gradationally decreases to 0 by 245m.	{237.2-240.7} «5-8% py., 1% gal., trace cpy., trace sph.»	
245.00 TO 259.00	«MAF LAP TUFF»	Light to dark green. Typical mafic lapilli tuff, with stretched light green clasts (avg. 1cm x 5cm) in chloritic matrix. FOLAITION at 249.0	65	Sericitization minor in clasts.	1% pyrite.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
259.00 TO 276.10	«MAF ASH TUFF»	Dark green. Fine grained. Abrubt contact at 60deg. to core axis which parallels: FOLIATION at 259.0	60	Chloritized.	1% access. py.	
		Even grained granular chloritic greenstone with hints of ghosted lapilli. Foliation moderate to intense.				
		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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD21777	53.50	55.00	1.50	.085	.42	.28	7.9	.23															
BCD21778	55.00	56.70	1.70	.010	.01	.02	0.5	.01															
BCD21779	56.70	58.20	1.50	.007	.01	.01	0.4	.01															
BCD21780	58.20	59.70	1.50	.007	.02	.03	1.7	.05															
BCD21781	59.70	61.20	1.50	.008	.16	.14	0.3	.01															
BCD21782	61.20	62.20	1.00	.055	.09	.02	2.6	.08															
BCD21783	62.20	63.70	1.50	.024	.01	.02	1.8	.05															
BCD21784	63.70	65.20	1.50	.004	.01	.01	0.6	.02															
BCD21785	65.20	66.70	1.50	.012	.02	.02	0.5	.01															
BCD21787	74.70	76.00	1.30	.010	.01	.04	2.3	.07															
BCD21788	76.00	76.60	0.60	.067	1.84	.30	9.8	.29															
BCD21789	76.60	77.70	1.10	.006	.02	.02	0.4	.01															
BCD21790	77.70	77.80	0.10	.010	.01	.03	0.3	.01															
BCD21791	77.80	80.10	2.30	.463	9.80	2.03	26.3	0.34															
BCD21792	80.10	81.00	0.90	.029	1.17	.09	1.4	.04															
BCD21793	81.00	82.50	1.50	.009	.02	.01	0.4	.01															
BCD21795	130.30	131.00	0.70	.022	.01	.02	0.2	.01															
BCD21797	134.10	135.60	1.50	.035	.37	.02	1.8	.05															
BCD21798	163.50	165.00	1.50	.021	.05	.05	1.7	.05															
BCD21800	177.60	178.90	1.30	.013	.01	.01	0.3	.01															
BCD22928	206.00	207.50	1.50	.007	.18	.02	0.7	.02															
BCD22930	225.90	227.20	1.30	.217	4.02	1.70	20.5	.60															
BCD22929	225.80	225.90	0.09	.046	1.03	.21	3.6	.11															
BCD22931	227.20	228.20	1.00	.029	.60	.36	2.6	.08															
BCD22932	232.00	233.50	1.50	.071	.34	.26	6.9	.20															
BCD22933	233.50	235.00	1.50	.088	1.80	1.02	19.7	.57															
BCD22935	237.20	238.20	1.00	.061	.73	.40	6.6	.19															
BCD22936	238.20	239.20	1.00	.032	.45	.05	2.4	.07															
BCD22937	239.20	240.70	1.50	.052	.31	.04	3.1	.09															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD21776	47.50	50.50	3.00	60.01	17.06	.25	1.98	.42	4.45	6.49	.26	.77	.125		37	65		94.56	55	71	.3	550	.09				197	1
BCD21786	70.40	73.40	3.00	82.00	6.60	.39	.40	.14	1.67	4.22	.01	.42	.100		35	69		98.50	5	120	.6	31	.06				96	1
BCD21794	89.00	90.50	1.50	59.49	13.90	2.55	2.92	.37	3.56	7.58	.31	.63	.085		38	99		94.93	5	80	.9	60	.14				57	1
BCD21796	120.00	121.50	1.50	53.88	17.09	.16	3.33	.45	4.22	8.53	.49	.80	.105		45	161		90.46	5	67	.3	73	.11				67	1
BCD21799	167.00	168.50	1.50	55.71	16.77	.72	1.04	.71	3.76	10.75	.03	1.58	.220		134	124		98.76	10	186	.8	41	.12				603	3
BCD21925	206.00	207.50	1.50																									
BCD21934	236.20	237.20	1.00	37.50	12.27	4.20	14.55	.04	.03	16.77	.29	1.07	.005		443	7601		91.15	5	10	3.0	820	.34				1	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG290 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 110+20mW

PLOTTING COORDS GRID: MINE
NORTH: 450.00N
EAST: 11045.00W
ELEV: 1033.07

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 196.00m
START DEPTH: 0.00m
FINAL DEPTH: 196.00m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: August 28, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX CAMP

PURPOSE: STRATIGRAPHIC HOLE ON REA ZONE (HORIZON)AT 110+20W4+10N.

DIRECTIONAL DATA: UTM'S 2266.35mE 70862.12 mN

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
120.40	-	-55° 0'	ACID		POOR ETCH	-	-	-	-	-	
123.70	-	-50° 0'	ACID	OK		-	-	-	-	-	
166.70	-	-59° 0'	ACID		POOR ETCH	-	-	-	-	-	
196.00	-	-60° 0'	ACID		POOR ETCH, NEW ACID ORDERED	-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 51.80	«CASING»					
51.80 TO 66.00	«FLT BX, FLT GOUGE RUBBLE»	Green. Variable. Incompetent, fine grained cemented matrix with bx'd. clasts. Clasts are angular, mafic generally, with some qtz. {63.5-64.6} «competent, unfaulted» Mafic xtal. tuff . FOLIATION	50	{51.8-61.0} «strg. chl.»		Fault is sinuous parallel to core axis.
66.00 TO 82.50	«MFTALT»	Dark green. Fine to med. grained. Competent fine to med. grained mafic xtal. tuff. Foliation defined by alignment of plaf. xtals. & chlorite. Typical coulomb failure qtz. extension veins. S1 parallel core axis S2 perpendicular core axic {77.4-77.5} «qtz. vn.» {79.8} «alt. flow» Core is br.	55 0 90 10 30	{66.0-82.5} «strg. chl.» {66.2-66.9} «mod. sil.» {72.6-72.7} «qdv.» {77.6-77.7} «ser., fuch., dol.» {79.8-80.2} «strg. ser., sil.» {80.6-81.3} «strg. ser.»	66.0-77.6 tr. diss. py. {77.6-77.7} «2% stringer py.» {79.8-80.2} «3% stringer py.» {80.6-81.3} «5% stringer py.» 81.3-82.5 tr. py.	This unit may grade into next which appears similar but coarser grained. Competent rock but core is rubbly.
82.50 TO 91.20	«M XTAL TUFF»	Grey/green. Med. to coarse grained. Moderately competent. Med. to coarse grained mafic xtal. tuff. FOLIATION {85.5-86.3} «flt. gouge, broken core» {86.6} «flt. gouge»	60	{82.6-82.7} «strg. ser., tr. fuch.» {84.4-85.5} «strg. ser., str. fuch.» {89.0-89.5} «strg. ser.»	{82.6-82.7} «2-3% py.» {84.5-85.5} «3% stringer py.» {89.3} «massive py. lens» {83.5} «banded py.»	May grade from previous unit, coarser grained. If this is true it suggests tops are up hole. 87.1-87.3 ser't interbed.
91.20 TO 94.90	«MAT»	Grey/green. Fine grained. Competent fine grained mafic ash tuff. FOLIATION {92.0-92.2} «flt. gouge» {92.9-93.0} «qvn.» {94.9} «flt. gouge»	65	{91.3-91.6} «mod. ser.» {93.7-93.8} «strg. ser.» {94.4-94.7} «strg. sed.»	{91.3-91.6} «1% stringer py.» {93.0-93.8} «2-3% stringer py.»	
94.90 TO 99.80	«M XTALT»	Grey/green. Med. grained. Moderately competent. Med. grained mafic xtal tuff. FOLIATION {94.9-95.0} «flt. gouge» {98.2-98.3} «flt. gouge»	65	{95.9-96.6} «v. strg.., sil., or qtz. vein, mod. ser.» {96.8-97.2} «strg. sil., ser.»	{95.9-96.6} «1% py., diss.and stringer» 95.5-96.6 tr. diss. py., stringer and pods.	96.6-96.8 broken core. 97.8-98.0 broken core.

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG290 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
99.80 TO 107.00	«MPYRO MLT»	Grey/green. Med. grained matrix with larger lapilli. Moderately competent lapilli tuff with med. grained xtal. tuff matrix and occasional ash tuff interbeds. FOLIATION {100-100.2} «mat. intbed.»	70	Lapillis are sericitically alt'd. {99.8-107.0} «mod. chl.»	Tr. diss. py.	Lapillis are infrequent. This is similar to previous unit except for presence of these few lapillis. 102.3-102.6 broken core. 103.9-104.6 broken core. 105.3-106.2 broken core.
107.00 TO 120.80	«FLT ZONE BX, GOUGE, RUBBLE»	Grey. Variable. Strongly fractured, rubbly, faulted. Flt. is sinuous roughly parallel to core axis. FOLIATION -- 180/0 Occasional competent zones as fault winds down core. {107-108.9} «rubbly mxtalt» {113.6-115.5} «rubbly m int»		{111.6-111.8} «strg. ser.» {117.3-118.9} «strg. ser.» Tr. fuch.	107.-120.8 tr. py.	
120.80 TO 121.50	«ALT MXTALT»	Yellow/brown. Fine grained. Competent fine grained sericiticly altered mafic xtal tuff. FOLIATION	70	{120.8-121.5} «strg. ser.» Tr. fuch.	120.8-121.5 tr. py.	
121.50 TO 126.70	«MXTALT»	Grey/green. Med. grained. Moderately competent med. grain foliated mafic xtal. tuff. FOLIATION	50	{121.5-126.7} «mod. to sil.» Tr. fuch.	{121.5-122.1} «1% py. in stringers and lenses» 122.1-126.7 tr. py.	126.4-126.7 rubbly core.
126.70 TO 135.80	«MPYRO MLT»	Grey/green. Lapillis in fine to med. grained matrix. Moderately competent, sheared in places, lapilli tuff with ash and xtal. tuff matrix. FOLIATION {135.1-135.3} «graphitic intbed» {129.9} «small shear» {131.4} «small shear» {135.4-135.8} «qvn»	50 70 80 10	{126.7-135.8} «mod. to strg. sil» {129.3-129.6} «mod. ser.»	{128.1-129.8} «2-3% stringer and banded py.» 128.1-129.8 1% banded and stringer py.	Graphitic intbed. similar to convoluted chert/arg. of sam.
135.80 TO 139.90	«MXTALT»	Grey/green. med. grained. Weakly competent med. grained mafic xtal tuff. FOLIATION {139.5-139.8} «shear fabric» 180/000	85	135.8-136.4 wk. ser. {136.4-138.6} «mod. ser.» {139.4-139.6} «strg. sil.» 139.5-139.8 tr. fuch.	135.8-136.4 tr. py. {136.4-138.6} «2-3% py.,stringers,pods»	Unit ends abruptly at fault zone.
139.90 TO 146.80	«FLT ZONE & GRAPH ARG»	Dark grey to black. Fine grained and variable. Incompetent faulted and sheared pyritic graphitic argillite. Fault parallels core axis and is sinuous. {140.2-141.4} «competent graphitic, pyritic mut» {141.7-148.5} «competent graphitic, possibly arg»		{139.9-146.8} «extremely graphitic»	{140.2-141.4} «20% fine grained py. matrix»	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG290 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
146.80 TO 158.60	«MYTALT»	Grey/green. Med. grained. Fairly competent, sheared and faulted in places med. grained pyritic mafic xtal t. FOLIATION {149.} «small shear» {151.2-151.3} «flt. gouge» {151.9-152.0} «shear» {153.5-153.6} «shear» {156.-156.2} «arg. intbed.» {156.4-156.9} «arg. intbed.» {156.9} «flt. gouge» {157.2-157.6} «arg intbed.»	80 80	146.8-158.6 -- weak fuch., weak ser.	{146.8-158.6} «15-20% fine grained py. in matrix» {156.0-156.2} «2% coarse grained euhedral py.» {156.4-156.3} «5% coarse grained diss. py.» {157.2-157.6} «5% coarse grained diss. py.»	Interbedded arillites are similar to those found in sam stratigrathy.
158.60 TO 159.50	«MUT»	Brown/grey. Coarse grained lapillis with fine grained matrix. Competent where unsheared coarse grained lapillis in fine grained py. matrix. FOLIATION	80	Weak ser.	{158.6-160.5} «30% fine grained py. in matrix»	
159.50 TO 166.50	«MPYRO» MLT	Grey/green. Coarse grained. Competent where unfaulted coarse grained mafic lapilli tuff. FOLIATION {159.8-160.} «flt. gouge» {165.6-165.8} «flt. gouge» {166.1} «small shear»	80	{159.5-166.5} «mod. ser.»	{159.5-160.7} «5% diss. py.»	Py is med. grained diss. and void filling. Also occurs as stringers.
166.50 TO 168.70	«FLT BX, GOUGE»	Black to green. Variable. Incompetent strongly faulted and gouged zone of graphitic seds and mafics. {166.5-166.7} «mafic gouge» {166.7-168.4} «graphitic arg. gouge» {168.4-168.7} «mafic gouge» FOLIATION	80	{166.5-166.7} «strg. ser., tr. fuch.» {168.4-168.7} «strg. ser., tr. fuch.»	{166.5-168.7}	Sinuous flt. roughly parallel to core axis.
168.70 TO 170.30	«MYTALT»	Grey/green. Med. grained. Moderately competent locally sheared, mafic xtal. tuff. FOLIATION Contains graphitic interbeds.	85	Weak ser.		Grades into argillites down hole.
170.30 TO 196.00	«ARG»	Black. Fine grained. Weakly competent fine grained argillite interbedded with siliceous siltstone. FOLIATION/BEDDING Cleaves along bedding planes. {170.3-170.5} «flt. gouge» {171.4-172.3} «flt. gouge» {182.} «flt. gouge»	80			173.2-173.5 fractured core. 181.9-182.1 fractured.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		{193.6-195.0} «folded flt. gouge» FAP -- 180				
		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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD21808	82.60	82.90	0.30	.013	.03	.02	1.0	.02															
BCD21817	141.70	142.30	0.60	.010	.02	.01	0.2	.02															
BCD21818	144.00	144.90	0.90	.012	.01	.02	0.4	.01															
BCD21820	150.70	151.40	0.70	.011	.10	.06	0.3	.16															
BCD21821	158.60	159.50	0.90	.010	.02	.01	0.2	.17															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD21809	69.80	72.90	3.10	44.59	14.58	8.45	6.60	3.93	.07	8.94	.16	1.41	.020		85	88		89.19	5	46	.5	47	.29				13	1
BCD21810	87.80	90.60	2.80	38.11	11.74	8.74	10.35	.90	.96	9.99	.16	1.33	.025		73	85		82.89	5	78	.7	60	.32				18	3
BCD21811	92.70	94.70	2.00	43.77	14.77	5.95	7.35	2.10	1.96	11.55	.14	2.31	.035		67	95		94.75	5	45	.6	54	.30				43	2
BCD21812	96.60	99.60	3.00	36.33	9.56	10.41	12.00	.29	.38	9.53	.20	1.15	.025		64	85		80.98	10	99	.9	66	.36				28	5
BCD21813	100.80	103.90	3.10	34.18	10.48	9.14	13.96	.01	.01	11.09	.18	1.16	.005		55	109		80.58	5	28	.8	68	.36				28	1
BCD21814	121.50	124.40	2.90	37.21	11.94	11.69	7.86	2.15	1.33	8.81	.23	1.33	.030		77	57		85.59	5	30	.7	65	.31				53	7
BCD21815	130.40	133.20	2.80	36.10	12.32	13.12	7.41	2.89	1.63	8.49	.22	1.70	.035		62	67		87.48	5	37	1.0	66	.35				100	13
BCD21816	135.80	137.70	1.90	40.53	13.52	7.37	9.52	1.83	.46	9.92	.19	.96	.020		55	91		85.60	15	18	.8	57	.31				84	1
BCD21819	147.10	150.00	2.90	54.50	14.04	.56	.76	1.02	2.64	11.51	.04	.92	.030		83	185		97.33	35	27	.7	212	.11				266	17
BCD21822	159.90	162.90	3.00	49.84	16.70	2.64	4.99	2.65	1.73	11.46	.14	1.41	.050		101	117		99.00	15	37	.3	52	.19				104	4
BCD21823	168.80	170.50	1.70	46.50	14.60	3.78	7.55	.10	2.25	10.55	.11	1.02	.055		85	140		86.89	5	43	.5	61	.25				18	1
BCD21824	185.10	188.20	3.10	56.94	15.56	1.39	3.23	1.33	3.76	7.05	.06	.85	.050		46	110		90.69	5	40	.1	42	.11				64	2

MINNOVA INC.

HOLE NUMBER: RG291 — DRILL HOLE RECORD — IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 105+20mW section

PLOTTING COORDS GRID: mine
NORTH: 765.00N
EAST: 10518.00W
ELEV: 1150.88

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 278.30m
START DEPTH: 0.00m
FINAL DEPTH: 278.30m

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

DATE STARTED: September 1, 1989
DATE COMPLETED: September 3, 1989
DATE LOGGED: September 3, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX CAMP

PURPOSE:

DIRECTIONAL DATA: UTM 2863.334E/70750.672N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
84.10	-	-50° 0'	ACID	OK		-	-	-	-	-	
120.70	-	-49° 0'	ACID	OK		-	-	-	-	-	
157.30	-	0° 0'	ACID		FAILED	-	-	-	-	-	
203.00	-	0° 0'	ACID		FAILED	-	-	-	-	-	
222.50	-	-49° 0'	ACID	OK		-	-	-	-	-	
278.30	-	-51° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 33.50	«CASING»					
33.50 TO 37.50	«ARG + CHT BX»	Black to dark grey. Fine grained. Subangular to subrounded chert clasts (.5-2cm) in a matrix of black argilliceous mat'l. matrix supported. Clasts aligned to foliation at	70	Minor silicifaction assoc. with uncommon bull qtz.-dol. veinlets.	2% py., trace cpy. dissem. in matrix.	
37.50 TO 40.20	«SER CHERT + ARG»	Lt. grey. Fine grained. Interbanded contact with bleached sericitic sediments, assoc. with silicification from 10cm qtz.-dol. veins (three in interval) chert predominates with sericitic partings Veinlets are irregular. FOLIATION	70	Sericite, pale yellow to pale green, completely altering argillite. Silicification surrounds qtz. (+,- dol.) veinlets.	2% py. dissem.	
40.20 TO 42.00	«CHT + ARG»	Black to dark grey. Fine grained. Very dark but siliceous interval with contorted laminations, minor bx., and lots of "imbrications" (stacked laminated blocks at a high angle to foliation) possible small scale fold nose? FOLIATION Contorted lamination -- 0deg. to 45deg.	70	Possible pervasive silicification.	5% dissem. py., some quite coarse (upto 5mm) and in rounded grains. Trace gal., sph. {40.2-42.0} «5% py.»	
42.00 TO 47.50	«CHERT»	Grey. Fine grained. Very distinctive, hard grey chert with thin carbonaceous partings or non at all. Some short intervals (10-20cm) of black arg. Again, a lot of lamination down the axis of the core.		Hazy bordered qtz. "sweats" and more sharp walled stockwork qtz.-dol. veinlets.	Sulphides occur in disseminations and wisps within argillaceous portions. 1-2% py.	
47.50 TO 48.30	«MSSX»	Metallic yellow. Med. grained. Interbanded contact with med. grained massive pyrite, cpy., gal., and sphalerite. Faintly banded roughly parallel to foliation	65	Quartz gangue.	{47.5-48.3} «60% py., 10% gal., 5% cpy. 5% sph.»	Distinctive suphide textures: rounded py., clotty fine cpy., specular galena, blackjack.
48.30 TO 54.80	«CHERT»	Grey. Fine grained. As on other side of massive sulphides, distinctive lam. grey cherts. FOLIATION BEDDING?	70 20		Only 1% py. except {53.5-54.8} «5% py., 3% sph., trace gal.» due to presence of two 5cm semi-massive seams.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
54.80 TO 78.00	«CHT + ARG»	Light/dark greys. Fine grained. Argillaceous content increases gradationally to about 30%. Very finely laminated and contorted interval.		Minor silicification around widely spaced, thin, barren qtz. veinlets.	2-3% diss. py.	
78.00 TO 91.90	«SIL CHT + ARG»	Black and white. Fine grained. Stockwork qtz. veinlets increase to 15% of interval. Argillaceous portions quite fissite and crumbly. Sulphide content increase. FOLIATION	70	Silicification around stockwork veinlets, some quite hazy, possible'sweats'	Increase to around 5% pyrite overall except {81.5-82.3} «smsx., 15% py., 3% cpy., 3% sph., trace gal.» Sulphides cnocentrated in silsicified portions and veinlets.	Crumbly argillaceous material and competent siliceous mat'l suggests a possible partial melting of a cherty arg.? Components could have separated, with a wet, siliceous on mingling with pb.-zn. rich circulating hydrothermal fluids.
91.90 TO 94.30	«SER ARG + CHERT»	Lt. grey. Fine grained. Pale green sericite completely replacing argillaceous bands. Chert laminae are broken and contorted.		Sericitized strongly with minor silicification.	1-2% finely diss. pyrite.	
94.30 TO 102.20	«CHERT»	Grey. Fine grained. Predominantly grey chert with minor black argillaceous partings, seams, and bands.		Minor silicification assoc. with widely spaced qtz. veinlets.	1% diss. py.	
102.20 TO 104.60	«SER CHT + ARG»	Lt. grey. Fine grained. Strongly foliated sericitic cherts with about 25% sericite.	75	Sericitization of argillaceous portions apparently centered about 10cm barren white qtz. veins (widely spaced).	Overall about 3% dissem. py., with local concentrations to 5%.	
104.60 TO 112.60	«CHT + ARG»	Lt. to dark grey. Fine grained. Interval begins with a graphitic shear zone from 104.6-105.2 followed by a fault gouge. Core is badly broken due to graphitic partings in chert thoughout interval. True breccia at base of interval.		Sericite in patches and along minor select arg. wisps.	2-4% diss. py.	{105.2-105.4} «fault» {111.2-112.6} «cht + arg bx»
112.60 TO 122.40	«SER CHT + ARG»	Lt. green/grey to lt. grey. Fine grained. Sericitic cherts, again due to presence of 10-20cm qtz dol. veins every 2or3m. Strong FOLIATION at	65	Majority of argillite is sericitized, with minor graphitic zones remaining up to 1m long.	2-3% py. overall except {121.3-121.6} «smsx. 15% py., 3%cpy.,2% gal.,2% sph.»	121.6-122.4 has 5% py. in very fine grained seams.
122.40 TO 134.10	«CHERT»	Grey. Fine grained. Well laminated grey cherts with graphitic partings. At 126m LAMINATIONS FOLIATION	40 70	Stockwork, hazy white quartz veinlets (10%) barren of sx.	1-2% pyrite.	Bx at base from 132-133. Core badly broken from 131 to end of interval.
134.10 TO 134.50	«CORE LOSS 90%»	Ground up core with mainly qtz. and chert fragments, but also a few frags. of massive sulphide.				

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG291 DATE: 7-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
134.50 TO 134.80	«MSSX»	Metallic yellow. Med. grained. Well mineralized, massive sulfides, medium grained with irregular patches of cpy. and wisps of coarser galena. Qtz. gangue.			{134.5-134.8} «35% py., 10% cpy., 5% gal., 2% sph.»	Sulphide interval probably about .5m long, but some core lost in above interval.
134.80 TO 147.30	«SER CHT + ARG»	Lt. grey. Fine grained. Strongly foliated with some seams very pyritic and fine grained almost approaching "muddy tuff".	65	Intense sericitization of arg. portions (15%).	Very fine grained in sericitic seams overall about 5% pyrite with intervals upto 10%.	{150.0-150.1} «fault gouge» Bully qtz. veins 10-20cm again present every 3 or 4 metres.
147.30 TO 155.40	«CHT + ARG»	Black to grey. Fine grained. Strongly foliated grey chert argillite, with long graphitic intervals and lesser sericite in patches.	60	Sericitization restricted to .5m intervals or less.	1-3% py. dissem.	Laminae contorted but small s-folds showing vergence to northeast?
155.40 TO 156.60	«QTZ DOL VEIN»	White. Coarse grained. Bully, massive, coarse vein with irregular graphitic hairline stringers. Contacts parallel to foliation.	60		Barren of sx.	
156.60 TO 165.40	«CHERT»	Grey. Fine grained. Grey, thinly laminated with some graphite seams, especially near base.			1% py.	
165.40 TO 166.30	«CHT + ARG BX»	Black and grey. Intensely brecciated, shattered chert laminae in argillite matrix, ends in fault gouge.			2% pyrite dissem. in matrix.	{162.3-162.5} «fault gouge»
166.30 TO 218.80	«DOL SEDS»	Brown and grey. Fine grained. Distinctive colour change to brown sericite and dark grey dolomite-qtz. bands. Avg. FOLIATION Minor bx. at 203m.	65	Dolomite flooded cherty bands, with iron stained sericite interbands.	Overall about 2-3% py. with local concentrations eg. {174.0-174.5} «7% py.» and {217.7-218.8} «5% py., trace sph.»	Rare dense black argillite seam upto 10cm not altered. Probably a cherty siltstone and argillite interval selectively dolomitized.
218.80 TO 229.90	«CHERT»	Grey. Interbanded contact with dolomite grad. decreasing. Grey laminated cherts with subordinate argillite. Avg. FOLIATION	85	Contorted interval becomes brecciated at 229.0-229.9.	4% diss. py.	
229.90 TO 230.90	«DOL SEDS»	Lt. brown to grey. Short reversed to dolomitic sediments. Relict textures show internal breccia.		Dolomitized and sericitized.	3% py., 2% gal., trace cpy., trace sph. in fine stringers.	Brecciated.
230.90 TO 256.00	«CHT + ARG BX»	Lt. and dark grey. Very contorted and brecciated chert and black argillite. FOLIATION SWINGS ie. at 231 at 232.5 at 234	 50 25 55	Very minor local sericite.	1-2% diss. py. At 250m the drillers report a "cave" Few pebbles of core recovered contain massive pyrite and sphalerite pebbles along with chert and argillite. {250.0-250.1} «cave? mssx. frags.»	First appearance to 2-5cm silty interbeds at 247m. Probably tuffaceous beds (ed. mpyro).

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		at 246	55			
256.00 TO 256.60	«MAFIC TUFF»	Dark green. Fine to med. grained. Short interbed of chloritic mafic ash (?) tuff. Lower contact at 55deg. FOLIATION	40	Chloritized.	trace py., trace sph?	
256.60 TO 268.80	«CHT + ARG BX»	White, grey, black, and green. Fine grained. Very churned up cherty argillites, also contain some clasts and thin beds of green tuffaceous mat'l (less than 10%). Interbedded contact at 268.8 at angle Avg. FOLIATION	80 80	Minor silicification.	1% py.	From 259-261 a stockwork of white qtz. veins with not sx. Graphitic bx. over last 3m before contact.
268.80 TO 278.30	«MPYRO»	Lt. to med. green. Fine to med. grained. Mafic pyroclastic interval with strong foliation and ghosted lappilli. Foliation decreases in intensity downhole. Lapillis to 5cm. END OF HOLE.	85	Weak chlorite and sericitization centered around lapillis. Thin veinlets containing soapy white talc.	1% py.	No pyritic zone at this contact!

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD22939	37.50	39.00	1.50	.053	.01	.02	12.3	.02															
BCD22940	39.00	40.20	1.20	.011	.01	.01	0.4	.02															
BCD22941	40.20	42.00	1.80	.077	.93	.36	4.7	.11															
BCD22942	46.50	47.50	1.00	.023	.89	.52	5.9	.02															
BCD22927	47.50	48.30	0.80	1.580	5.30	13.20	229.0	0.38															
BCD22943	48.30	49.30	1.00	.002	.04	.02	0.3	.02															
BCD22945	53.50	54.80	1.30	.041	1.60	.46	8.4	.06															
BCD22947	78.50	80.00	1.50	.021	.34	.16	7.5	.02															
BCD22948	80.00	81.50	1.50	.020	.70	.34	8.2	.19															
BCD22949	81.50	82.30	0.80	.211	1.45	2.23	43.6	.43															
BCD22950	82.30	83.80	1.50	.006	.26	.16	4.0	.03															
BCD22952	103.40	104.60	1.20	.060	1.18	.40	5.2	.05															
BCD22954	119.80	121.30	1.50	.002	.03	.02	0.4	.01															
BCD22955	121.30	121.60	0.30	.413	.97	1.02	68.4	.17															
BCD22956	121.60	122.40	0.80	.003	.02	.04	1.5	.04															
BCD22957	133.10	134.10	1.00	.001	.01	.02	0.2	.01															
BCD22958	134.50	134.80	0.30	3.47	.63	15.20	84.0	.45															
BCD22959	134.80	135.50	0.70	.057	.59	.55	3.7	.04															
BCD22960	135.50	137.00	1.50	.013	.02	.10	0.9	.02															
BCD22961	137.00	138.50	1.50	.001	.01	.02	0.4	.01															
BCD22963	174.00	174.50	0.50	.017	.03	.01	1.9	.02															
BCD22965	196.00	197.40	1.40	.006	.01	.01	1.8	.01															
BCD22966	217.70	218.80	1.10	.030	.14	.02	1.8	.04															
BCD22967	219.80	220.30	0.50	.007	.08	.02	1.4	.18															
BCD22969	229.90	230.90	1.00	.030	.33	.13	2.3	.02															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22938	35.00	37.50	2.50	69.94	13.51	.68	1.39	.37	3.35	4.81	.10	.62	.135		232	204		97.36	5	119	2.4	170	.09				212	6
BCD22944	49.30	52.30	3.00	84.01	6.99	.24	.59	.12	1.76	3.05	.01	.30	.175		26	121		98.99	5	204	.7	36	.04				163	1
BCD22946	68.00	71.00	3.00	78.60	8.25	.43	.76	.13	2.05	4.62	.01	.52	.155		32	61		98.36	5	197	.7	56	.05				101	1
BCD22951	97.00	99.00	2.00	88.18	3.97	.45	.30	.12	.90	2.71	.01	.20	.050		30	49		98.72	5	96	.7	20	.04				133	5
BCD22953	117.00	118.30	1.30	60.29	15.94	.33	2.09	.35	4.14	6.62	.26	.69	.150		38	74		92.79	5	115	.3	31	.10				100	1
BCD22962	138.50	140.50	2.00	65.47	13.51	.41	1.55	.32	3.55	6.82	.29	.57	.120		14	34		96.46	5	104	.3	52	.09				60	1
BCD22964	198.00	199.50	1.50	35.93	11.31	6.91	7.90	.76	1.27	11.48	.34	1.08	.035		93	112		81.71	5	41	1.3	67	.29				265	5
BCD22968	222.00	224.50	2.50	86.92	4.92	.36	.50	.12	1.13	2.90	.01	.29	.080		50	91		99.01	5	142	.7	27	.04				184	1
BCD22970	238.00	240.00	2.00	56.67	10.70	6.48	4.11	.37	2.10	5.97	.27	.60	.100		39	122		87.96	5	103	1.2	42	.21				76	1
BCD22971	256.00	256.60	0.60	32.85	13.81	10.05	8.81	.15	2.08	11.53	.29	1.14	.155		120	200		81.68	5	99	1.7	63	.32				99	2
BCD22972	273.00	276.00	3.00	40.57	12.92	5.96	12.95	1.02	.24	10.36	.21	1.19	.020		89	147		86.30	5	36	1.6	77	.31				1	1

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 14+50 EL BENCH

PLOTTING COORDS GRID: MINE
NORTH: 740.00N
EAST: 9709.00W
ELEV: 1450.00

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

COLLAR DIP: -89°30' 0"
LENGTH OF THE HOLE: 488.90m
START DEPTH: 0.00m
FINAL DEPTH: 488.90m

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

DATE STARTED: September 1, 1989
DATE COMPLETED: September 12, 1989
DATE LOGGED: 0, 0

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

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

CONTRACTOR: ATLAS
CASING: PULLED
CORE STORAGE: SAM EX CAMP

PURPOSE: DRILLED TO TEST DOWNHOLE GEOPHYSICAL ANOMALY. HOLE ABANDONED WHEN RODS BROKE OFF 160 FT. ABOVE

DIRECTIONAL DATA: THE BIT.

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
0.00	225° 0'	-89° 0'	TRO-PARI	OK		-	-	-	-	-	
30.50	0° 0'	-89° 0'	TRO-PARI		AZIMUTH ERRATIC	-	-	-	-	-	
121.90	192° 0'	-85° 0'	TRO-PARI	OK		-	-	-	-	-	
213.40	191°30'	-80° 0'	TRO-PARI	OK		-	-	-	-	-	
304.80	194° 0'	-75° 0'	TRO-PARI	OK		-	-	-	-	-	
365.80	199° 0'	-75° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 3.40	«CASING»					
3.40 TO 31.60	«DOL MAF LAP TUFF»	Lt. grey creamy. Overall, the unit consists of sericitized "lapilli" (<1-5+cm) floating in a chloritized mafic matrix; moderate qtz./carb.(dol) veining and flooding.		Varying amounts of sericitization (esp. in lapilli), chloritization (in the tuffaceous matrix) and qtz./carb. alt. related to veining and flooding.	Varying amounts of dissem. + banded py.	Lower limit of doloritic mafic lapilli tuffs is taken where dolomite is less than approx. 2% (blue stain used to determine dolomite).
	3.4-8.0	Qtz./dol./fe-carb., veining and flooding.		Rust on fracture surfaces. Silicification and dolomitization associated with veining.	Dissem. py. (trace 3%).	Highly broken core (approx. 60% core recovery). Is this dolomitized mafic lapilli tuff a correlatable unit/alteration facies?
	8.0-20.1	Mafic lapilli tuff; lapilli are lightly to moderately stretched at approx. 55deg. to core axis; lapilli are a creamy colour, supported in a dark green matrix.	55	Lapilli are lightly to moderately serecitized; matrix is moderately chloritized.		
		Some of the dolomitic veining is folded, with the fold axis approx. 45deg. to core axis.	45			
	{20.1-20.3}	White/rust. «qtz.-carb. vein» Approx. 60% qtz., 40% carbonate, (dolomite +/- fe-carb.)	90			Either a vein or intense flooding.
	20.3-26.8	Dolomitic mafic lapilli tuff. Moderately veined and flooded with white qtz.-carbonate.		Serecitized lapilli; chloritized mafic matrix.	Local trace py.	
		VEIN	50			
	{26.8-27.0}	White qtz./carb. veining with disseminated and stringer sulphides; sulphides also form "blobs" up to 1cm. long.		Chloritized + qtz./carb. veining.	«py. 5%, cp. 3%, gal. 3%»	Assay interval containing the sulphides is 26.7-27.2m.
	27.0-31.6	Dolomitic mafic lapilli tuff.		Dolomitization + serecitization (banded parallel to py.)	«banded py. trace 5%» + disseminated py.	Sulphides & alteration appear to be genetically related.
		PY BANDING	40			
31.60 TO 53.30	«MAF LAP	Overall, the interval is a lt. olive (lapilli) to		It doesn't look like this on screen!?		
TO 64.20	TUFF»	dark green (matrix).				
	31.6-51.9	Mafic lapilli tuff; lapilli are lt. olive green & range from < 1cm-5+cm in size; lapilli are slightly stretched at 45deg. to core axis.	45	Mafic matrix is light to very lightly chloritized; lapilli are lightly to moderately serecitized.	Local py.; dissem. & in bands at 45 to core axis.	
	51.9-53.3	«qtz. flooding» Banded qtz. veining, upto 90% volume.	10		Trace py.	Probably not a very thick qtz. system, as the angle to core axis is quite low. 51.9-54.5: highly broken core(recovery approx. 70%); possibly related to qtz. veining and flooding.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
53.30 TO 64.20	«MAF LAP TUFF»					
	53.3-61.7	Mafic lapilli tuff; light olive green, lightly serecitized lapilli; dark green, lightly chloritized matrix. Lapilli stretched at approx. 80 to core axis.	80	Lt. serecitization (lapilli); lt. chloritization (matrix). Almost no veining in upper part of interval; veining increases in lower part of interval.		
	{61.7-64.2}	Lt. qtz. veining in mafic lapilli tuff; dissem. py banded parallel to serecitic partings. There appears to be at least 2 generations of qtz. veining; the earlier phase is folded, with axial plane 75 to core axis; the second, more dominant phase of qtz. (+/- carb.) veining and flooding is not deformed.	45 75	Lt. serecitization along partings at 45 to core axis.	«py. 1-5%, gal. trace 1%» as blebs, bands, and disseminations.	
64.20 TO 69.70	«QTZ/CARB/SI»	Overall mottled whit, grey, cream, and black with dull yellow semi-massive py. + galena. This unit appears to be a completely qtz.-carb. flooded mafic tuff (?); there are stringers of sericite. The carbonate is mostly calcite, as it does not stain blue.		«qtz.-carb.-ser.» quartz-carbonate-sericite.	«py. 5-15%, gal 1-5%, cp. trace, sp. trace» The py. appears as disseminated "clots" and "blobs"; the galena appears largely as dendritic fringes of the qtz.-carb. veins.	Is the py. more closely related to sericitization while the gal., cp., & sp. are more closely related to qtz.-carb. veining? Correlatable unit/alteration.
69.70 TO 79.90	«SHEARED MAF LAP TUFF»	Green. Typical mafic lapilli tuff, with sheared intervals upto 2.3m long.		Local qtz.-carb. veining.		This is a significant sheared interval; is it correlatable?
79.90 TO 184.20	«MAF LAP TUFF»	Green. Overall, fairly homogeneous; lapilli are lightly to moderately stretched at 55 to core axis Lapilli are a lt. green; matrix is dark green. Lightly to moderately veined with qtz.-carb. throughout the interval. 123.3m: folded qtz. veins; axial plane=cleavage at 50 to core axis.	55 50	Lightly to moderately chloritized matrix.		Main body of the mafic lapilli tuff unit. The bottom of the unit is gradational over 20-25m with the underlying sedimentary (grit/wacke?) unit; however, the bottom has been defined as being at the lowermost signigicant sericitized lapilli.
	{168.0-184.2}	Mafic lapilli tuff; appears to be locally brecciated, with intensified qtz. veining. Quartzy grit appears to be mixed in with the lapilli below about 174.0m. Also below about 174.0m, the tuffaceous matrix seems to get increasingly sericitized and dolomitized.		«ser. and dol. lapilli» Sericitized and dolomitized lapilli; this alteration increases towards the bottom of the interval. Alteration extends below the interval. Matrix becomes sericitized and dolomitized below about 174.0m.	Py. trace 1%; seems to be associated with sericitization.	
184.20 TO 197.00	«MAF LAP TUFF + DOL SEDS»	Yellow and grey. Seds range from a fairly coarse grained (>2mm) qtz. grit to a finer grained wacke; the sediments exhibit an overall coarsening upwards. Interlayers (upto 40+cm) of sericitized and dolo-		Rare trace fuchsite.		Interlayers of mafic lapilli tuff rep-

MINNOVA INC.

HOLE NUMBER: RG292 — DRILL HOLE RECORD — DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		nitized mafic lapilli tuff occur within the seds, especially in the upper part of the unit.				resentative of the beginning of the main overlying mafic unit?
197.00 TO 208.30	«SER CHT + ARG»	Yellow/white/black. Overall, a highly sericitized version of the underlying chert + argillite; several (>10) small faults with no apparent significant movement or gouge zones.				
	197.0-203.1	Highly sericitized, leaving white quartz (chert?) + sericite. Parallel sericite bands and dissem. py. bands.	50	Fuchsite along fractures in quartzy (cherty?) sections. Intense sericitization.	Py. 1-5% banded parallel to sericite.	It looks like the argillite has been preferentially sericitized, possibly because it is (was) more permeable to alteration fluids than the chert.
	203.1-208.3	Mixed chert + argillite and highly sericitized chert/argillite. There are at lest 2 phases of folded; the axial plane of the more dominant phase is subperpendicular to core axis. Argillites are graphitic.				
208.30 TO 257.70	«ARG + CHT»	Overall, grey to black cherts and argillites; the argillites have py. in varying amounts. Both the argillite and the py. content in it increase towards the bottom of the interval; near the bottom is almost entirely argillite, with local semi-massive py.				
	{208.3-217.0}	«CHT.» Predominantly light-med. grey chert; lesser argillite.		Patchy sericitization, decreasing downhole.	Upto 10% py. in argillaceous sections.	
	{217.0-217.2}	«FAULT» Light grey, moderately pyritic fault gouge.			Py. 10-15%.	
	{217.2-230.9}	«CHT-ARG BX» Appears to be a depositional breccia, with reworked cht., arg., and py.			Py. locally to 10-15%.	Py. reworked from argillite (ie. syngenetic).
	{230.9-233.0}	«ARG»			Py. locally to 5%.	
	{233.0-239.0}	«ARG + CHT-ARG BX» Predominantly argillite.			Py. upto 15%, particularly in brecciated sections.	
	{239.0-249.2}	Black. «ARG» Becoming increasingly pyritic downhole; py. is med to very fine grained, sometimes banded at 20 to core axis. Discontinous veins and lenses of qtz., increasing downhill.	20		«py. upto 30%»	Note increase in qtz. and py. towards sulphide zone.
	{249.2-255.5}	Significant qtz. veining and flooding begins, although patchy. Mostly syngenetic py., epigenetic gal. and sp. Banded py.	45	«PATCHY QTZ FLOODING»	«py 15-20%, gal trace 3%, cp trace, sp. trace 3%». Py. occurs both in qtz. and in seds; gal., sp., and cp. occur with qtz. flooding.	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG292 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
					Yellow/honey coloured sp.	
	{255.5-256.0}	«FAULT» Med. grey (cherty) fault gouge.			Trace py.	
	{256.0-257.7}	«CHERT» Brecciated, with very fine grained py. as stockwork.			«py. 5-10%»	
257.70 TO 269.40	«SMSI»	Occurs as semi-massive and stockwork in completely qtz. flooded argillite and chert. Where recognizable, the argillite is phyllitic & lightly graphitic; light to med. grey.		«QTZ FLOODING»	«Py. 15-50%, sp. 2-10%, gal. 2-10%, cp. trace» Py. is very fine to med. grained; sp. occurs as yellow/honey coloured blebs in qtz.	Sam horizon?
269.40 TO 271.00	«FAULT»	«CHERT» Brecciated and chewed up. Appears to be at a low angle to core axis (weaves in and out of the core)				
271.00 TO 279.90	«CHT/ARG BX»	Med. dark grey. «SHEARED» at 45 to core axis. Some clays on shear surfaces. Some argillites (contributing to fault gouge).	45		«Py 10-25%» in a stockwork parallel to shear.	Is this correlatable with the "muddy tuff"?
279.90 TO 280.40	«FAULT»	Chert/argillite fault gouge; sheared at varying angles to core axis.				
280.40 TO 299.40	«CHT/ARG MUT»	«SHEARED» Could be called a grit, as there are sections of white cherty looking clasts supported in a black, pyritic, argillaceous matrix; however, I think these are boudined cherty laminations which are broken up enough to form individual grains;			«Py. 10-40%»	Is this correlatable with the "muddy tuff" seen elsewhere. I think this unit was originally a finely laminated chert/pyritic argillite; because of shearing, all the laminations get boudined and disrupted, in places forming a clastic texture.
		281.6: laminations at	30			
	{285.6-285.8}	«FAULT» Sheared cht./arg./mut.	40			
	287.5-290.9	White quartzy bands; possibly sheared veins?				
	{290.9-291.3}	«FAULT»				
	291.3-297.1	Laminated, pyritic chert-argillite (mut); some white quartzy intervals; some 10cm brecciated sections.				
	{297.1-297.4}	«FAULT»				
	{297.4-299.4}	Laminated, pyritic chert-argillite (mut);increased quartz veining/flooding. Some folding (small scale) with fold axis at	80			

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
299.40 TO 300.00	«QTZ VEIN»	Quartz flooded. White qtz.; barren.				
300.00 TO 318.10	«SER CHERT ARG»	Yellow/white. Banded sericte, which I think has replaced argillite; Light grey to white chert bands.	65	Intense serecitizationof argillite.	Py. trace 2%.	Correlatable alteration facies beneath the mut??
	301.6-302.1	Small scale folding; fold axis at	70			
	{302.0-305.0}	«QTZ FLOODING»				
	305.0-318.1	Sericitized, qtz. flooded. Contorted laminations.				
318.10 TO 325.30	«CHERT»	Med. grey. Finely banded and laminated chert with minor argillite laminations. Fold axis parallel to spaced cleavage at	70			
325.30 TO 373.40	«SER CHERT ARG»	Same as 300.0-313.1m. Some intervals of less sericitized, blacker argillite and grey chert.		Moderate to intense sericitization.	Py upto 20% over 10cm intervals.	Appears to be a fairly homogenous chert argillite unit with varying amounts of sericitization, quartz flooding, and shearing.
	{341.2-342.9}	«SHEARED» at Chert and argillite lenses stretched and boudined parallel to shear. Cleavage parallel to shear.	30	Light sericite.		
	342.9-357.4	White/grey/yellow. Sericitized chert-arg. Argillite is completely sericitized to a yellow colour. Chert and quartz flooding is white to grey. Sericite bnading at	45	Complete sericitization of argillites.	Py. trace (very finely disseminated) near bottom of interval.	
		Some folding seen at bottom of interval; fold axis at	60			
	{357.4-360.5}	«CHERT/ARG./BX.» White to light grey chert breccia frags (2-30mm) in a black argillite matrix. Mostly clast supported. This is a depositional (not fault) breccia, as both upper and lower contacts are sharp, but not faulted; in addition, no fault gouge present. Bx. frags elongated parallel to partings at	50	Local trace to light sericitization.	Py. 1-5%.	
	360.5-373.4	Sericitized chert-argillite. Qtz. flooding. Very little recognizable argillite, as most is. Sericitized; qtz. flooded and veined; veining at	20		Py. trace 10% (varies locally); very fine to med. grained.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
373.40 TO 374.90	«CHERT ARG BX»	«FAULTED» While cherty breccia frags in black argillite matrix. Broken and fault gouged. Appears to be a conformable upper contact, with a faulted lower contact, with a faulted lower contact. 10cm section of faulted sericitized chert/argillite at bottom of interval.				
374.90 TO 413.90	«CHERT/ARG»	Grey to black. Overall, mostly chert; some intervals of banded chert and argillite.				
	{374.9-378.2}	«LAM + BX CHT» Laminated and brecciated chert; very little argillite. Laminated sections are contorted and highly folded.				
	{378.2-385.8}	«CHERT» Chert; fairly massive looking; locally granular. Locally brecciated with black argillite and grit. Sericitization banded at	50	Local light-moderate sericitization.	«Py. 1-10%» Varies locally; fine grained.	
	{385.8-403.6}	«CHT/ARG» Local variations from finely laminated cht./arg. to massive cht. to cht. bx. Laminated sections at	80	«DOL» Sericitization ranges from nil to moderate over 10-20cm. Dolomitization occurs along specific lams and is folded/contorted with lams.	«Py. trace 10%» Varies locally, possibly with amount of argillite.	
	{403.6-406.2}	Light brown. «DOL SEDS» Quite hard; siliceous. Becomes more cherty and brecciated towards bottom of interval. Granular texture on broken surface. No bedg/lams.		«DOL» Pervasive.		
	{406.2-413.9}	«CHT/ARG» Banded, ranges from 45-90 to core axis. Some banding has been brecciated. Qtz. flooding near bottom of interval.		Light sericitization. Very light dolomitization.	Py. trace 10%; varies locally; fine to med. grained.	409.1-409.6: mislatch; 20% core recovery.
413.90 TO 439.00	«CHERT GRAPH ARG»	Overall, laminated cherts and graphitic argillites with signigicant intervals of graphitic argillite.				413.9-418.0: moderately to highly broken core.
	{413.9-414.2}	«GRAPH ARG» Highly broken core.			Py. 3%.	
	{414.2-419.6}	«CHT-GRAPH ARG BX» Highly silicified. Qtz. veined (random).				
	{419.6-424.6}	«CHT-ARG» Argillite is non-graphitic. Laminated and bx. More arg. than cht.		Patchy sericitization of arg., increasing downhole.		
	{424.6-428.0}	«SER CHT-ARG» Qtz. flooded, brecciated. 20-30cm sections of massive/semi-massive sericite.		«SER» Intense sericitization.		
	{428.0-439.0}	«CHT-GRAPH ARG» Moderately to highly silicified. Sections of highly broken core(esp. in graph.arg.)				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
439.00 TO 449.00	«SER CHT-ARG»	Yellow/grey/white. Laminated and brecciated chert argillite. Some qtz. flooding.		«DOL» Associated with qtz. veining. Mod.-intense sericitization of arg.		445.5-449.0m: core moderately broken up 60-70% recovery.
449.00 TO 450.00	«FAULT»					
450.00 TO 456.00	«SER CHT-GRAPH ARG»	Bx. and lam. Local qtz. flooding. Some minor (<10cm) gouge zones. Some lams at	55	Mod.-intense sericitization of argillite.		Same lithology as 439.0-449.0
456.00 TO 464.40	«GRAPH ARG»	Locally qtz. flooded (up to 50cm intervals). Sheared (slicks on graphitic surfaces).				Moderately to highly broken core; 70-80% core recovery.
464.40 TO 468.40	«MAF ASH TUFF»	Light grey. Overall massive, fine to very fine grained.		«DOL» Moderate to highly dolomitized. Brown sericitized.		Last stages of mafics (indicative of main mafic body somewhere beneath?)
468.40 TO 469.70	«GRAPH ARG»	Black. Qtz. veined and flooded. Conformable upper and lower contacts; fairly sharp.				
469.70 TO 476.50	«DOL MAF ITAL/LAP TUFF»	Grey/brown. Dolomitized and sericitized blotches average 3mm across; were these mafic xtals? Ser./dol. mafic xtal elongated 50-70 to core axis	60	«DOL» Highly dolomitized. Blotchy sericitization.		Note: fining upwards in mafic intervals
476.50 TO 486.10	«GRAPH ARG»	«FAULTED» Overall, qtz. flooded; locally contorted lams.				Highly broken.
486.10 TO 488.90	«FAULT ZONE»	Graphitic argillite and mafic tuff (?). Highly broken up and faulted.				
	488.9	Hole abandoned.				
		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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD23086	26.70	27.20	0.50	.118	.24	.39	2.5	.09															
BCD23078	63.20	64.20	1.00	.004	.03	.09	1.9	.18															
BCD23079	64.20	65.20	1.00	.028	1.79	1.05	7.4	.22															
BCD23080	65.20	66.20	1.00	.073	2.20	1.96	10.8	.21															
BCD23081	66.20	67.20	1.00	.007	.09	.17	3.7	.17															
BCD23082	67.20	68.20	1.00	.006	.02	.02	2.0	.16															
BCD23083	68.20	69.20	1.00	.006	.01	.01	1.3	.08															
BCD23084	69.20	70.20	1.00	.005	.01	.01	1.6	.14															
BCD23085	70.20	71.20	1.00	.002	.02	.01	1.7	.13															
BCD23093	248.20	249.20	1.00	.009	.18	.03	3.8	.18															
BCD23094	249.20	250.20	1.00	.242	1.07	1.30	58.4	.57															
BCD23095	250.20	251.20	1.00	.024	.24	.18	8.3	.20															
BCD23096	251.20	252.20	1.00	.029	.76	.34	6.9	.19															
BCD23097	252.20	253.20	1.00	.032	1.52	1.00	14.8	.24															
BCD23098	253.20	254.20	1.00	.063	.51	.24	18.0	.32															
BCD23099	254.20	255.50	1.30	.027	.48	.31	8.1	.39															
BCD23100	256.00	257.70	1.70	.004	.08	.09	1.6	.19															
BCD22976	257.70	259.20	1.50	.022	.85	.24	5.7	.07															
BCD22977	259.20	260.50	1.30	.110	1.85	.64	18.2	.06															
BCD22978	260.50	261.60	1.10	.120	3.51	1.00	20.2	.20															
BCD22979	261.60	263.30	1.70	.218	3.05	2.01	39.7	.27															
BCD22980	263.30	264.50	1.20	.060	.58	.76	14.0	.02															
BCD22981	264.50	266.30	1.80	.107	2.14	1.45	20.0	.18															
BCD22982	266.30	267.60	1.30	.131	1.81	1.85	17.8	.21															
BCD22983	267.60	268.60	1.00	.010	.22	.30	4.0	.05															
BCD22984	268.60	269.60	1.00	.149	2.11	3.30	32.1	.24															
BCD21601	271.10	272.60	1.50	.088	.03	.02	20.2	.15															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD23076	17.70	19.20	1.50	38.56	12.27	6.46	11.40	2.04	1.33	10.38	.19	1.16	.035		83	106		84.16	5	16	1.4	66	.31				1	1
BCD23077	46.00	49.00	3.00	42.34	13.20	6.58	10.44	2.43	1.29	9.68	.22	1.22	.035		103	127		88.13	15	79	2.7	67	.30				1	1
BCD23087	81.60	84.60	3.00	40.79	12.54	9.53	9.43	2.34	1.32	9.85	.20	1.22	.060		80	333		87.87	20	261	3.0	310	.33				1	1
BCD23088	115.00	118.00	3.00	42.67	13.31	7.59	10.28	3.52	1.37	10.30	.19	1.25	.040		82	81		90.87	5	82	3.6	51	.33				1	1
BCD23089	152.00	155.00	3.00	40.89	13.08	7.05	10.77	2.37	1.33	10.52	.19	1.26	.140		81	98		88.02	5	1061	3.4	56	.31				1	1
BCD23090	182.20	185.20	3.00	36.91	12.41	8.06	12.33	1.01	2.02	9.71	.37	1.22	.070		78	193		84.96	5	52	1.6	150	.34				60	1
BCD23091	190.60	192.20	1.60	39.11	12.78	5.23	14.20	.45	1.69	10.25	.26	1.49	.040		68	412		86.73	5	25	2.0	297	.34				1	2
BCD23092	217.50	220.50	3.00	75.09	7.30	.18	.39	.87	3.02	6.09	.03	.89	.075		775	3623		99.05	2079	849	14.4	1679	.09				163	372
BCD23093	248.20	249.20	1.00																									
BCD21602	272.60	275.60	3.00	66.07	15.17	.04	.50	.85	3.64	6.28	.04	.57	.170		163	72		98.37	209	149	4.7	76	.09				102	44
BCD21603	302.00	305.00	3.00	60.97	16.59	.49	2.41	1.45	3.64	6.15	.31	.74	.110		45	83		94.75	5	103	.3	38	.11				45	1
BCD21604	331.00	334.00	3.00	64.78	13.40	.16	2.90	.76	3.26	5.66	.30	.55	.080		20	67		92.19	5	73	.1	32	.11				46	1
BCD21605	363.80	366.80	3.00	59.28	17.19	.08	2.07	.93	3.88	6.70	.37	.72	.145		63	110		92.33	15	123	.4	76	.10				93	1
BCD21606	380.70	383.70	3.00	51.38	11.24	6.06	5.96	.79	2.51	9.39	.33	.98	.080		105	143		91.92	75	89	1.6	178	.25				1000	6
BCD21607	403.60	406.20	2.60	43.11	12.12	2.66	6.30	1.08	2.17	14.79	.90	3.74	.075		196	215		87.61	5	91	.7	89	.24				29	1
BCD21608	413.90	415.60	1.70	24.65	2.07	21.92	11.72	.50	1.63	4.26	.42	.17	.045		41	101		68.62	5	72	2.6	265	.48				61	17
BCD21609	439.00	442.00	3.00	58.31	12.74	5.38	2.34	1.22	3.20	4.71	.28	.58	.120		58	53		89.69	5	143	1.4	46	.21				114	1
BCD21610	457.00	460.00	3.00	71.43	4.54	3.93	2.40	.99	1.90	4.17	.23	.22	.090		55	349		91.44	20	391	1.3	67	.17				134	1
BCD21611	464.40	467.40	3.00	26.62	7.50	17.66	9.71	.67	2.55	8.23	.45	.84	.100		55	95		77.12	15	105	1.8	150	.43				310	12
BCD21613	469.70	472.70	3.00	40.66	14.23	7.32	6.79	3.08	1.79	9.85	.18	1.18	.080		98	115		85.63	10	150	1.3	54	.29				32	1
BCD21612	482.50	485.50	3.00	58.20	2.26	10.03	5.56	.45	1.61	3.37	.17	.22	.005		47	352		82.68	15	89	1.7	100	.29				176	6

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG293 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 266 ZONE, 105+20mW

PLOTTING COORDS GRID: MINE
NORTH: 816.00N
EAST: 10514.00W
ELEV: 1154.85

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 282.20m
START DEPTH: 0.00m
FINAL DEPTH: 282.20m

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

DATE STARTED: September 3, 1989
DATE COMPLETED: September 8, 1989
DATE LOGGED: September 9, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX CAMP

PURPOSE:

DIRECTIONAL DATA: UTM 2901.36E/70787.778N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
41.50	-	-50° 0'	ACID	OK		-	-	-	-	-	
90.20	-	-49° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 31.30	«CASING»					
31.30 TO 38.40	«CHT + ARG BX»	Dark grey to black. Coarse. Matrix supported with some cht. clasts sub-rounded fragments well aligned parallel to ..... FOLIATION	85	Minor silicification locally assoc. with stockwork veinlets.	2% diss. py. overall except 36.9 to 38.4 has 2% diss. sph. in addition to py.	Core very broken up {31.3-35.3} «40% recovery»
38.40 TO 46.00	«DOL FUCH SED BX»	Light to bright green. Fine grained. Abrupt colour change with argillaceous matrix now altered to sericite and fuchsite. Apparently related to late qtz.-dol. stockwork veinlets from 40.3 to 40.8 which are irregular but ran along core axis clearly cutting the foliation which is	80	Weak to moderate dolomitization; strong sericitization. Both alterations become patchy from 45.5-46.0.	1-2% diss. py. overall with slight concentration within 40cm either side of stockwork to 5% pyrite.	{40.3-40.8} «qtz.-dol. stkwk.»
46.00 TO 69.80	«SER CHT + ARG BX»	Dark grey to light grey. Very gradational contact marked by decrease in dolomite and disappearance of fuchsite. FOLIATION Broken chert lapilli in argillaceous-sericite matrix, cut by 10-20cm qtz. veinlets widely spaced and irregular.	75	Sericitic alt.is patchy with .5m 'windows' of unaltered cht.-arg. bx.	2% pyrite dissem. except {54.4-54.8} «smsx.: 15% py., 5% gn., 2% sph., 2% cpy.» A sulphide rich seam assoc. with a qtz. vein. Also, 68.5-69.8 there is 5% py. assoc. with strong sericitization.	{65.0-66.1} «fault zone»
69.80 TO 80.10	«CHERT»	Dark grey. Distinctive very finely laminated contorted 'wispy' chert. Structurally displays many imbricate portions with bedding about parallel to core axis. FOLIATION	80	Minor silicification.	2% diss. py.	Foliation has difficult time penetrating this unit. Often takes the form of microfaults in 'imbricate' pattern at 80deg. Fold nose?
80.10 TO 104.00	«DOL SEDS»	Grey/brown. Fine grained. Sudden contact with more argillaceous seds that are more foliated and strongly dolomitized. Small windows indicate unit originally an argillite with minor cherty laminations. FOLIATION	65	Pervasive dolomitization with brown stained sericitic partings.	1-3% pyritic very finely disseminated.	Thin dol.-qtz. veinlets parallel foliation. {103.9} «fault gouge»
104.00 TO 141.50	«PY DOL SEDS»	Brown. Unit contains seams resembling 'muddy tuff' with dense, brown, fine pyrite, separated by more typical dolomitized argillite. Much of pyrite is cataclysed or milled. FOLIATION	60	Pervasive dol. and sericite. Low angle qtz.-dol. vein running along core axis at 107-107.3m.	About 10% pyrite with local intervals averaging upto 20% pyrite except {119.-119.3} «smsx., 15% py., 5% sph., 1% gn. 1% cpy.» with qtz. flooding.	{108.4-108.5} «fault gouge» containing sericite and talc. Not all of the pyritic (10%) mat'l was sampled, as much is barren of base metals.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
141.50 TO 142.70	«QTZ-CARB VEIN»	White. Coarse grained. Milky white qtz. vein with creamy carbonate (5%) contains ghosted fragments of wallrock. CONTACTS	25			
142.70 TO 146.00	«CHERT»	Grey. Fine grained. Wispy, contorted finely laminated grey chert. very competant unit except for carbonaceous parting. Weak penetrative fol.	60		1% pyrite.	Good marker.
146.00 TO 151.80	«PY ARG + CHT BX»	Black, brown and white. Strongly foliated to Sheared out interval of black argillite bx. with cht. frags. Matrix is sulphide rich.	70	Minor sil.	10% pyrite in matrix.	Fault gouges at 149.5, 151.0-151.3, and 151.8. Middle ore is the most significant. {151.0-151.3} «fault gouge».
151.80 TO 159.70	«CHERT»	Grey. Fine grained. Same hard, competant laminated chert with wispy contortions. Resists penetrative foliation. Upper contact gouged, lower contact at parallel to foliation.	70	Minor silicification of argillaceous interbeds.	1% diss. py.	
159.70 TO 162.00	«ARG + CHT BX»	Black and grey. Interval begins with good, competant black argillite and chert with moderately contorted lamellae at At 161m the unit is sheared and brecciated with broken chert and fine pyrite lamellae.	50	Minor light green to white talc in bx.	5-7% pyrite overall, as disseminations and fine grained clasts in breccia.	
162.00 TO 163.60	«CHERT»	Grey. Fine grained. Wispy laminated chert with minor argillaceous (black) interlaminations. FOLIATION	60	Minor sil.	2% diss. py.	
163.60 TO 165.50	«MSSX»	Mettallic yellow. Med. grained 'milled-up' massive pyrite with siliceous gouge, and wisps of fine grained galena, chalcopyrite, and sphalerite. Minor talc-sericite interbeds,strongly foliated at Interval ends with a gougey shear zone, which contains minor green mica.	70	Minor sericite and talc, along with silica and dolomite.	{163.6-165.5} «50% py., 5% cpy., 2% gn. trace sph.»	{165.5-165.6} «fault»
165.50 TO 197.10	«DOL SEDS»	Brown and grey. Fine grained. Probably a cherty argillite interval, now completely carbonatized, with brown sericite wisps in a grey granular matrix. Some interbedded, contorted, and minor bx. internal textures now largely masked. Foliation is weak and curvilinear 60-80.		Dolomitized strongly with widely spaced dol.(+/- qtz.) veinlets at all orientations. Sericite is stained fe-brown.	1-2% diss. py.	{188.4-199.5} «qtz.-dol. vein at 30deg» does not contain sulfides; barrent milky. {193.7-194.1} «fault gouge»

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
197.10 TO 205.00	«ARG + CHT BX»	Black. Chert clasts to 2cm. Upper contact is sheared, as is much of this interval. Very black and broken. Cert lamellae broken and milled-up. Foliation and clast aligned at	55	Minor graphite, mostly black and friable.	2-3% py.	{197.1-197.2} «flt.» {199.0-199.4} «flt.» {202.6-203.6} «flt. zone»
205.00 TO 205.80	«MSSX»	Metallic yellow. Med. grained. Milled up pyrite in "balls" upto 7mm, bloblike cpy., and dissem, sph. Gangue is dol. with lesser qtz. Lower contact at	50	Sulphides are milled and gangue is predominantly dolomite. No penetrative foliation.	{205.-205.8} «35% py., 10% cpy., 5% sph trace gn.»	Ends in shear {205.8-205.9} «flt.»
205.80 TO 227.80	«DOL SEDS»	Grey and brown. Fine grained. As before, brown sericitic wisps and grey granular to crystalline dolomitic seams. Faint relict textures suggest protolith was cherty argillite. FOLIATION 50-60	55	Pervasive intense carbonatization (dolomitization).	1-2% diss. py.	{227.8-229.2} «flt. gouge»
227.80 TO 243.60	«CHT + ARG BX»	Black and grey. Starts in rubbly fault zone upto 229.2. Variably churned up laminated chert and argillite. Mostly matrix supported with local contorted intervals. FOLIATION at 234.2	60		1-2% py. dissem.	{235.6-235.7} «flt.» Predominantly chert (approx. 70%) lesser arg. (30%).
243.60 TO 247.30	«QTZ-DOL STKWK»	Grey. Cherty argillaceous bx. cut by qtz. dol. stockwork veinlets running along core axis. Bleached dolomitic envelopes surround veinlets.		Pervasive dolomitization assoc. with late crosscutting stkwk qtz. dol. veinlets, some vuggy.	1% diss. py.	{243.5-243.6} «flt.»
247.30 TO 252.30	«CHT + ARG BX»	Black and grey. Chert clasts to 3cm. Strong matrix supported breccia. FOLIATION Clasts aligned parallel to foliation.	60	Minor thin qtz. dol. stringers along fol. planes.	1% diss. py.	
252.30 TO 267.30	«DOL SEDS	Brown and grey. Fine grained. Gradational contact over 20cm. As previously stated probably chert argillites with little original textures preserved. FOLIATION	55	Fe stained sericite partings and intense dolomitization.	2% py. diss.	{267.3-267.4} «flt.» Unit ends at fault gouge.
267.30 TO 270.60	«CHERT»	Dark grey. Fine grained. Distinctive wispy laminated chert, cut by low angle qtz. carb. veinlets and locally brecciated. Possible marker?		Minor dolomite assoc. with veinlets.	1% py.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
270.60 TO 276.00	«DOL SEDS»	Brown and grey. As previously described uphole. Grad. contacts.		Intense dol.	1% py.	
276.00 TO 280.10	«CHERT»	Black and grey. Fine grained. More distinctive wispy laminated chert (marker) with lesser argillite partings. Core is badly broken. FOLIATION 55-65	60	Low angle qtz. carb. veinlets with assoc. carbed envelopes.	2-3% py.	These cherty intervals have resisted carbonitization.
280.10 TO 280.40	«MASSIVE PYRITE»	Metallic yellow. Milled pyrite with "balls" upto 5mm. Also contains clasts of argillite.			60% pyrite with no hints of base metals Primary exhalative pyrite from pyritic argillite?	
280.40 TO 282.20	«CHT + ARG BX»	Black and grey.. Chert clasts upto. Matrix supported for the most part, cut by qtz. carb stringers and veinlets, widely spaced. END OF HOLE.		Sil. dol. assoc. with veinlets. Core is badly broken.	2-3% py.	Hole abandoned due to caving along the rod string.

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD23600	35.30	36.90	1.60																				
~~BCD22985~~	~~35.90~~	~~36.40~~	~~1.50~~	.680	1.58	.79	296.0	.81															
BCD22986	36.40	39.70	1.30	.014	.02	.01	3.5	.04															
BCD22987	39.70	41.20	1.50	.019	.03	.03	4.0	.06															
BCD22988	41.20	42.50	1.30	.005	.01	.01	0.6	.04															
BCD22990	53.40	54.40	1.00	.006	.02	.02	0.7	.01															
BCD22991	54.40	54.80	0.40	.970	5.75	4.92	185.0	.24															
BCD22992	54.80	55.80	1.00	.018	.11	.09	1.9	.02															
BCD22994	69.50	69.80	1.30	.011	.02	.02	1.0	.01															
BCD22997	104.00	105.50	1.50	.009	.10	.08	1.6	.04															
BCD22998	105.50	107.00	1.50	.044	.79	.47	3.8	.13															
BCD22999	107.00	108.50	1.50	.023	.02	.03	0.4	.07															
BCD23000	108.50	110.00	1.50	.058	1.16	.13	2.3	.18															
BCD23026	110.00	111.50	1.50	.017	.06	.04	1.4	.37															
BCD23027	115.10	116.60	1.50	.019	.12	.18	2.7	.38															
BCD23028	116.60	117.60	1.00	.028	.01	.09	2.4	.26															
BCD23029	117.60	119.00	1.40	.152	1.45	.62	7.6	.44															
BCD23030	119.00	119.30	0.30	1.12	2.91	3.80	42.0	1.21															
BCD23031	119.30	120.30	1.00	.024	.03	.06	1.9	.18															
BCD23033	125.90	127.40	1.50	.122	.42	.30	4.0	.18															
BCD23035	146.00	147.50	1.50	.008	.06	.04	2.3	.16															
BCD23036	147.50	149.00	1.50	.011	.02	.11	2.8	.41															
BCD23037	149.00	150.50	1.50	.012	.09	.08	1.8	.92															
BCD23038	159.70	161.00	1.30	.008	.01	.01	1.6	.01															
BCD23039	161.00	162.60	1.50	.008	.01	.02	1.7	.01															
BCD23040	162.60	163.60	1.00	.007	.04	.02	0.4	.03															
BCD23041	163.60	164.60	1.00	1.120	4.28	3.43	26.8	.45															
BCD23042	164.60	165.50	0.90	.942	5.80	3.29	26.3	.45															
BCD23043	165.50	166.50	1.00	.021	.05	.08	2.5	.02															
BCD23044	166.50	168.00	1.50	.012	.01	.01	1.8	.01															
BCD23046	194.10	195.10	1.00	.014	.02	.01	2.1	.01															
BCD23047	195.10	196.10	1.00	.023	.02	.02	0.6	.02															
BCD23048	196.10	197.10	1.00	.010	.23	.13	1.7	.02															
BCD23049	204.00	205.00	1.00	.041	1.42	.70	4.0	.20															
BCD23050	205.00	205.80	0.80	2.14	3.17	3.28	37.8	.38															
BCD23051	205.80	206.80	1.00	.083	.06	.12	1.6	.02															
BCD23057	275.40	276.00	0.60	.031	.19	.17	2.5	.05															
BCD23056	280.10	280.40	0.30	.017	.04	.29	3.4	.01															
~~BCD23058~~	~~280.70~~	~~281.00~~	~~0.30~~																				
BCD23059	281.00	281.30	0.30																				

Sample	From (m)	To (m)	Length (m)	CU %	ZN %	PB %	AG G/T	AU G/T	SB %	AS %	CU PPM	ZN PPM	PB PPM	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB		
~~RCD23062~~	~~281.30~~	~~281.60~~	~~0.30~~																					

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD22989	42.50	45.50	3.00	37.47	11.30	9.76	12.51	.28	1.11	10.22	.55	.64	.040		200	420		89.45	60	40	3.8	299	.36				239	67
BCD22993	56.30	58.30	2.00	62.94	15.24	.15	2.11	.39	3.71	6.77	.20	.64	.095		12	51		93.52	5	76	.5	34	.08				74	1
BCD22995	73.40	76.00	2.60	85.78	4.85	.37	.37	.08	1.08	2.83	.01	.30	.105		52	90		97.65	5	168	1.1	30	.04				98	1
BCD22996	76.00	99.60	23.60	37.69	13.43	10.72	6.01	.97	1.83	9.44	.21	1.21	.075		94	69		82.97	5	56	1.5	51	.31				164	3
BCD23032	123.00	124.50	1.50	59.65	13.88	.27	.41	.88	2.54	9.77	.01	1.29	.090		133	119		98.73	70	86	.7	194	.09				1050	18
BCD23034	142.70	144.70	2.00	83.82	5.19	.54	.48	.23	.90	4.14	.02	.24	.050		11	16		98.96	55	71	.4	47	.05				214	7
BCD23045	168.00	170.00	2.00	34.91	12.03	11.35	7.95	1.11	1.19	8.99	.23	1.11	.065		94	66		80.33	5	59	1.3	59	.33				198	5
BCD23052	199.00	201.40	2.40	65.27	11.18	2.27	2.65	.70	1.92	6.24	.33	.56	.115		118	87		93.71	5	145	.8	273	.13				191	4
BCD23053	219.50	221.50	2.00	37.99	12.23	5.96	9.72	.70	1.78	10.91	.35	1.50	.100		114	70		83.02	5	145	1.3	62	.28				120	7
BCD23054	239.00	240.50	1.50	61.67	13.93	.85	2.62	.41	3.14	6.80	.41	.70	.110		51	79		91.97	5	86	.5	61	.10				48	1
BCD23055	264.00	267.00	3.00	55.35	12.42	.26	.54	.61	2.43	11.21	.01	1.17	.085		122	133		97.70	50	101	.6	44	.10				1028	13

MIKKOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG294 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 266 ZONE, 105+20mW

PLOTTING COORDS GRID: MINE
NORTH: 868.00N
EAST: 10511.00W
ELEV: 1158.22

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 238.30m
START DEPTH: 0.00m
FINAL DEPTH: 238.30m

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

DATE STARTED: September 8, 1989
DATE COMPLETED: September 11, 1989
DATE LOGGED: September 11, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX CAMP

PURPOSE:

DIRECTIONAL DATA: UTM 2936.953E/70827.478N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
89.60	-	-50° 0'	ACID	OK		-	-	-	-	-	
189.00	-	-49° 0'	ACID	OK		-	-	-	-	-	
225.50	-	-48° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 36.60	«CASING»	No recovery.				
36.60 TO 43.90	«MUDSTONE» MUT?	Dark grey. Fine grained. Non-descript brown mudstone, strongly foliated, with very finely disseminated pyrite in wisps and thin partings, with minor siliceous & black argillaceous "paper thin" bands. Some may be very stretched out siliceous and argillite clasts. See litho sample. Possibly a mut?	80	The interval begins with 15cm piece of dolomite veined and altered seds which probably is from a boulder lying on bed rock, as both ends of the core are rounded.	7-10% pyrite.	{40.5-40.6} «flt. {41.0-43.9} «45% recovery»
43.90 TO 53.30	«ARG FAULT ZONE»	Black to dark grey. Predominantly soft black, partially graphitic gouge and mud, with a few angular shards of qtz. vein material.			Trace py.	{43.9-53.3} «25% recovery»
53.30 TO 69.10	«SER ARG + CHT»	Pale green grey to dark grey. Soft, friable interval, with numerous gouge. Zones upto 1m long recognizable as schistose sericitic argillite and chert. SCHISTOSITY Appears to have been laminated and contorted, not a true bx. Now a fault breccia.	60	Patchy sericitization with 10-40cm windows of unaltered argillites. Numerous angular blocks appear rotated in the fault breccia.	Trace py.	{53.3-69.1} «fault breccia» About 90% recovery.
69.10 TO 81.90	«CHT BX»	Grey. Fine grained. Shattered chert with sericitic and fuchsite gouge. A few milky white barren qtz. veins upto 20cm wide.		Sericitic and fuchsite in argillaceous portions.	2-3% diss. py.	{69.1-81.9} «40% recovery» Core badly broken. {74.8-78.0} «fault gouge»
81.90 TO 83.60	«SER CHT + ARG»	Grey. Fine grained. Schistose at Friable along sericitic partings.	55	Fuchsite and sericite.	3% diss. py.	Some original bx. textures visible in unbroken core.
83.60 TO 85.80	«QTZ VEIN»	Milky white. White crystalline qtz. with a few pyritic, stylolitic-like stringers. Both contacts broken and irregular.		Sericitic wallrock inclusions.	2% py.	
85.80 TO 93.40	«SER FAULT BX»	Pale grey. Blocks, pebbles, and fine angular clasts of sericitic seds in a soft earthy gouge zone. A few pieces of white qtz. vein throughout.		Sericitic and crushed!	1% py.	Very incompetent rock.
93.40 TO 96.30	«QTZ VEIN»	Milky white. Formerly crystalline qtz. vein, completely barren of sulphides or wallrock inclusions Internal milled up texture to the qtz., with portions reduced to dust. Interval is "healed" and competent. Broken contacts.		Recrystallized quartz.		Remarkably intense milled-up textures! Major fault zone, possibly reactivated several times.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
96.30 TO 115.50	«SER FAULT BX»	Grey. Healed breccia and earthy gouge with blocks of qtz. vein, sericitic argillite, clay, and some black cherty argillite. Some shearing and clast alignment at 10-20deg. to core axis but its quite sinuous.	15	Sericite and clay alteration.	1% pyrite. Except {112.0-112.2} «15% py. in arg.» a short seam of py. rich argillite.	Distinctive clay rich rock from 108.5-110.0m. End of fault zone (collar to 115.5).
115.50 TO 139.00	«DOL SEDS»	Grey and brown. Dolomitization is gradational up-hole into the fault bx. for possibly 1or2m. Foliation at 115.5m is but by 118.0m is Possibly dragged out by fault.	45 80	Intense dolomitization, but relict cherty argillite textures visible. Sericite is fe-brown.	1% pyrite.	How angle dol.-qtz. veinlet, 5cm wide at 10deg. core axis at 119.9m.
139.00 TO 156.80	«ARG + CHT BX»	Black and grey. Fine grained. Strongly foliated to schistose at Argillite is a little predominent over chert.	70	Select bands are dolomitized, usually 5-10cm, except 144.4-146.6, which is entirely dolomitized. The remainder of the interval is black and unaltered.	2% pyrite.	{156.8-156.9} «flt.»
156.80 TO 231.00	«DOL SEDS»	Grey and brown. Intense, complete carbonatization of contorted sediments. Widely spaced qtz.-carb. veinlets, barren of sulphides. FOLIATION	80	Ferrodolomite and brown sericite. Only one small window of argillite and chert bx. at 197.5 that escaped alteration. Trace fuchsite at 213.7.	Trace pyrite.	Minor fault gouges at 167.0m, 187.5m, 198.6m, as well as a more major one at {212.2-219.7} «flt. gouge» More fault gouges at 225.8-226.3, 227.6 to 228.0, 229.3-230.1, and at 231.0 the lower contact.
231.00 TO 238.30	«CHT + ARG BX»	Black and grey. Fine grained. Very broken core, with shattered chert and cherty argillaceous material. No foliation. Cut by a network of tiny qtz. stockwork veinlets, in places a boxwork. END OF HOLE.		From 236.8-237.6 there is moderate dolomitization, then right back into black argillaceous and cherty mat'l.	2% pyrite.	Hole abandoned due to caving and pinching of the rods near the top of the 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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD23102	81.70	83.60	1.90	.017	.04	.01	1.2	.18															
BCD23103	83.60	85.00	1.40	.004	.01	.01	0.4	.10															
BCD23110	111.90	112.30	0.40	.147	.98	1.68	26.2	.27															
BCD23112	236.80	237.60	0.80	.012	.02	.01	2.2	.03															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD23101	41.00	43.90	2.90	56.16	20.75	.08	.43	1.58	3.42	7.86	.01	.76	.185		48	83		98.80	5	93	.8	25	.06				48	4
BCD23104	65.00	66.50	1.50	61.90	16.13	.15	1.23	.41	3.96	6.98	.11	.71	.120		144	249		95.44	5	179	1.2	42	.07				143	1
BCD23105	107.00	109.00	2.00	44.16	13.99	6.32	8.21	.09	1.31	11.30	.25	1.60	.060		32	15		88.91	20	120	.5	21	.25				44	1
BCD23106	130.50	133.00	2.50	36.38	12.69	12.51	4.81	1.40	1.50	7.98	.17	1.17	.060		26	71		84.81	5	98	.5	48	.34				126	1
BCD23107	151.40	153.40	2.00	69.82	5.19	6.49	2.97	.17	1.16	4.30	.27	.53	.075		61	104		93.64	5	52	1.1	62	.22				60	1
BCD23108	180.00	183.00	3.00	33.67	11.07	17.16	9.63	.92	1.54	9.96	.35	1.04	.060		93	64		86.26	15	42	1.6	51	.47				181	3
BCD23109	209.00	212.00	3.00	38.09	13.21	14.24	8.12	1.52	.97	9.72	.24	1.17	.055		49	84		90.34	10	158	1.3	49	.40				99	1
BCD23111	231.00	233.40	2.40	52.22	4.65	13.43	5.91	.27	.87	3.57	.11	.39	.055		74	63		82.96	15	51	1.8	66	.35				128	8

MIKKOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG295 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 266 ZONE

PLOTTING COORDS GRID: MINE
NORTH: 787.00N
EAST: 10471.00W
ELEV: 1164.51

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 294.40m
START DEPTH: 0.00m
FINAL DEPTH: 294.40m

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

DATE STARTED: September 11, 1989
DATE COMPLETED: September 16, 1989
DATE LOGGED: September 16, 1989

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

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

CONTRACTOR: ATLAS
CASING: LEFT IN HOLE
CORE STORAGE: SAM EX CAMP

PURPOSE:

DIRECTIONAL DATA: UTM 2914.28E/70736.456N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
33.50	-	-51° 0'	ACID	OK		-	-	-	-	-	
99.40	-	-51° 0'	ACID	OK		-	-	-	-	-	
151.20	-	-52° 0'	ACID	OK		-	-	-	-	-	
217.60	-	-51° 0'	ACID	OK		-	-	-	-	-	
267.00	-	-51° 0'	ACID	OK		-	-	-	-	-	
294.40	-	-51° 0'	ACID	OK		-	-	-	-	-	
289.60	223° 0'	-51° 0'	TRO-PARI	OK	TROPARI	-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 30.50	«CASING»					
30.50 TO 37.50	«CHT + ARG BX»	Black. Well foliated, with stretched and rounded chert clasts upto 3cm. Matrix supported for the most part.	60	Fairly fresh.	1-2% pyrite.	Possibly a debris flow.
37.50 TO 46.60	«FUCH + DOL ALT BX»	Grey and bright green. Interval is ferro-dolomite flooded with bright green fuchsite developed along with dissem pyrite. FOLIATION	65	Carbonatized, with fuchsite. Qtz.-dol. vein from 141.9-142.0 at 25deg. to core axis, barren of sx.	Upto 5% pyrite (3% overall).	Similar to fuchsitic rock at the top of RG293.
46.60 TO 54.50	«CHT + ARG BX»	As above, but with weaker foliation at Well rounded chert clasts in black matrix.	80	Widely spaced qtz.-dol. veinlets cause minor local dolomitization.	1-2% pyrite.	
54.50 TO 56.60	«SER CHT»	Light grey. Fine grained. Abrubt contact with competent cherts with sericitic partings at Interval contorted textures, but no bx.	85	Strong sericite.	1-2% pyrite.	
56.60 TO 66.00	«CHERT»	Grey. Fine grained. Very finedly laminated, distinctive grey chert with contorted and wispy carbonaceous partings. Very weak penetrative foliation roughly perpendicular, with abundant brittle imbrications. Minor siliceous white patches, possibly sweats.		Weak local sericite.	2-3% py. as fracture fillings with qtz.	Marker bed!
66.00 TO 67.10	«SMSI»	Metallic yellow, black, and white. Quartz flooded and fractured contacts. Interval consists of milled pyrite (+/- sph) in a matrix of quartz and argillaceous mat'l. Minor cht. frags. also.		Silica flooded.	{66.0-67.1} «25% py., 5% sph., tr.cpy.»	Sulphide breccia in a qtz. matrix filling a dilatant? Zone in chert.
67.10 TO 75.70	«CHERT»	Grey. Fine grained. As on other side of sulphide zone. Finely laminated and contorted grey cherts, resistive to penetrative foliation. Abundant imbrications suggest original bedding along core axis.		Minor white and barren qtz. flooding.	1-2% py. in fractures.	This unit often hosts mineralization.
75.70 TO 95.70	«DOL SEDS»	Grey and brown. Pervasively carbonatized sediments (cht + arg?) assoc. with widely spaced ferro-dolomite + qtz. veinlets. FOLIATION	75	Brown sericite, and intense dolomitization. Relict breccia textures visible.	Intervals upto 10% very fine grained pyrite overall 3-4% py. {84.2-85.9} «10% py.»	Portions resemble a 'mut', but too strongly altered to tell. {90.4-91.1} «fault bx.»

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
95.70 TO 99.90	«CHT + ARG BX»	Black. Crackled and cut by qtz. veinlets and flooding. Black chert and argillite in locally matrix supported breccia. FOLIATION Gradational upper and lower contacts.	70	Silicified fracture controlled.	5% pyrite as milled fracture fillings.	
99.90 TO 141.50	«DOL SEDS»	Grey and brown. Very gougey upper contact, then right back into strongly carbonatized interval, as before. Some black argillaceous material has escaped carbonatization, and these windows often contain seams of pyrite. MODERATE FOLIATION	65	Strong sericite and ferro-dolomite alteration products.	Overall 3% py. with concentrations upto 10%, in a rock resembling almost a dolomitized "mut". {133.3-135.9} «10% py., trace sph.»	{99.9-100.5} «fault breccia» {108.3-109.4} «fault bx.»
141.50 TO 142.40	«SMSX»	Metalic yellow and grey. Coarse grained. Faulted upper contact at Milled up pyrite in a matrix of qtz and dolomite. Predominantly matrix supported pyrite "balls" avg. 5mm.	55	Qtz. and dol. flooded.	{141.5-142.4} «30% py., 3% sph.»	{141.4-141.5} «fault at 55deg.»
142.40 TO 150.30	«CHT BX»	Black and grey. Fine grained. Dark cherty argillite matrix with light chert clasts. A few seams of pyrite over first meter. STRONGLY FOLIATED The breccia becomes clast supported and intraformational downhole.	75	Minor qtz. flooding in irregular veinlets.	From 142.4-143.2: 10% py., trace sph. Overall 2-3% py. as fracture fillings and dissem.	{147.4-148.5} «fault bx.»
150.30 TO 172.50	«CHERT + ARG»	Dark grey and black. Fine grained. Laminated chert with subordinate argillaceous mat'l. Very contorted, with some local brecciation. FOLIATION	60	Silicification assoc. with irregular qtz. veinlets (fracture filling). From 167.6-168.1 a milky, vuggy qtz. vein contains trace gn. and sph.	Dissem. py. (1-3%) assoc. with arg.	Relatively competent siliceous unit.
172.50 TO 176.70	«ARG + CHT BX»	Black. Clasts to 20cm. Matrix supported argillaceous, with grey chert clasts. Weakly FOLIATED Faulted with interbanded dolomitization.	60	Variably silicified and dolomitized in patches.	Dissem py. up to 10% avg. 4%. {172.5-173.7} «10% py.» in a siliceous band.	{175.6-176.7} «fault bx.» with minor talc.
176.70 TO 209.10	«DOL SEDS»	Grey and brown. Fine to med. grained. Strongly dolomitized interval with brown sericitic partings Relict textures show similar contorted cht. + arg. as from 150.3-172.5. Resistive to penetrative foliation except at 180.3 where foliation Possibly a c-s fabric? At 208.5m the foliation is moderately developed	35 70	Ferrodolomite pervasive alteration, only 5% brown sericite.	Dissem py. 1-2% with a few 1-2cm clasts of fine py.	Minor interval relict bx. textures. (ie. prior to dolomitization).

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
209.10 TO 223.50	«CHT + ARG»	Black and grey. Fine grained. Chert is slightly dominant. Unit is intensely contorted and in places becoming tectonic bx. (intraformational).		Minor silicification assoc. with veinlets. From 218.8-221.0 a shattered qtz vein contains fracture filling py.	2-3% py. (avg.).	Ptygmatic folded qtz. veinlets. {218.8-221.0} «qv, 10% py.» badly broken with 40% recovery.
223.50 TO 228.90	«CHERT»	Lt. grey. Aphanitic. Very competent, light grey 'marker' chert. Moderately fractured & resistant to penetrative foliation. Very minor carbonaceous matter on irregular and contorted partings. Broken contacts.		Cut by stockwork white, hazy bordered quartz veinlets. The interval is silicified.	2-3% fracture filling pyrite.	Competent, resistant, marker bed.
228.90 TO 231.70	«ARG + CHT»	Black. Fine grained. Intensely deformed, sheared, graphitic argillaceous unit, with subordinate thin chert laminations. Highly contorted, boudinaged, and brecciated (local). SHEARING	70	Minor talc.	Pyrite occurs disseminated in argillite and in thin seams and clasts from {230.7-231.1} «10% py. in seams and clasts» Overall 3% py.	{229.6-231.2} «graphitic flt. gouge» This unit appears to have taken up much of the strain from surrounding competent cherts.
231.70 TO 236.40	«CHERT»	Lt. grey. Fine grained. As before, competent, with minor impurities along partings. Portions have a fine sugary texture indicating recrystallization of the silica in this chert. Locally shattered and healed with white qtz.		Silicification assoc. with hazy qtz. stkwk.	2% f.f. pyrite.	
236.40 TO 245.00	«SHEARED ARG + CHT»	Abrubt contact with strongly cataclyzed argillite and chert. Laminations rotated, and angular clasts aligned parallel to graphitic FOLIATION Stretching is intense with paper thin clasts common.	75	Thin qtz.-dol. veinlets common with assoc. envelopes of sericitization.	1-2% pyrite overall. Except from: {239.4-239.5} «10% py., 3% gn., 2% cp., in qdv.» in irregular, deformed qtz. and dol. veinlet and flooding.	
245.00 TO 248.00	«CHERT»	Lt. grey. Fine grained. Interval begins and ends in strong fault gouges. Again its the competent, partially recrystallized chert. Weak foliation and ptgs 50-70deg. Lower contact is graphitic gouge.		Silicified with "sweats".	1% py. filling fx.	{245.0-245.5} «flt. bx.» {247.8-248.0} «flt. gouge»
248.00 TO 252.80	«PY DOL SEDS»	Lt. to dark brown. Fine grained. Intensely ferrodolomite flooded, with faint relict contorted laminated seds texture. Becomes more pyritic down hole.		Intnse dol. and grey sericite with fuzzy patches of pyritization?	Patches of fine grained pyrite, resembling an alteration/replacement upto 15% {250.0-252.8} «15% pyrite alt.»	
252.80 TO 294.40	«WKLY DOL ARG + CHT»	Black/grey to green/grey. Fine grained. Upper contact is faulted. This interval consists of variably dolomitized and sericitized argillite and chert, which is strongly foliated and locally brecciated. Stretching is intense upto the fault at 285.9m. After the fault the stretching and foliation is weaker, with more contorted laminations visible	65 60	Thin dol.-qtz. veinlets common, but pervasive alteration occurs in patches (5-10cm) and select seams upto 3m long. Sericitization accompanies the pervasive dol., and is light yellow to light green in colour, possibly denoting the presence of some chloritic mafic ash component? Black argillaceous unalter-	1-2% diss. py.	{252.8-253.5} «flt. gouge and bx.» {285.9-286.0} «flt. gouge»

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		and less bx. Pale green to yellow sericite and dolomite alteration predominates to end of hole, with some black argillite.		ed patches present to end of 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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
BCD23059	37.50	38.50	1.00	.003	.01	.01	2.0	.10															
BCD23060	38.50	39.30	0.80	.002	.01	.01	2.2	.07															
BCD23061	64.80	66.00	1.20	.001	.01	.01	1.0	.10															
BCD23062	66.00	67.10	1.10	.078	4.67	.67	20.0	.41															
BCD23063	67.10	68.10	1.00	.002	.20	.03	2.0	.15															
BCD23064	68.10	69.10	1.00	.004	.02	.02	4.1	.17															
BCD23065	69.10	70.60	1.50	.034	.60	.84	12.2	.29															
BCD23067	75.70	76.70	1.00	.006	.45	.10	2.6	.06															
BCD23068	84.20	85.90	1.70	.014	.16	.08	4.0	.44															
BCD23069	88.90	89.30	0.40	.029	.95	.56	7.6	.35															
BCD23070	90.20	91.00	0.80	.012	.44	.24	6.3	.28															
BCD23071	93.30	95.20	1.90																				
BCD23115	95.70	97.20	1.50	.002	.04	.05	2.0	.15															
BCD23072	101.80	103.00	1.20	.003	.04	.06	4.2	.15															
BCD23074	133.30	134.80	1.50	.028	.06	.04	2.3	.17															
BCD23075	134.80	135.90	1.10	.046	3.57	.93	8.2	.21															
BCD23113	141.50	142.40	0.90	.101	5.80	2.28	14.5	.76															
BCD23114	142.40	143.20	0.80	.092	3.24	.75	10.0	.57															
BCD23120	167.60	168.10	0.50	.045	.16	.08	4.2	.07															
BCD23117	172.50	173.70	1.20	.005	.04	.02	2.6	.20															
BCD23118	173.70	175.20	1.50	.004	.02	.01	3.4	.18															
BCD23119	175.20	176.20	1.00	.088	.29	.16	6.0	.14															
BCD23122	218.80	221.30	2.50	.001	.01	.01	1.8	.03															
BCD23124	218.80	221.30	2.50																				
BCD23126	228.80	229.60	0.80	.002	.04	.01	1.9	.04															
BCD21627	238.40	239.40	1.00	.038	.40	.32	4.4	.06															
BCD21628	239.40	239.90	0.50	.118	.84	1.03	10.2	.12															
BCD21629	239.90	240.90	1.00	.129	.86	1.20	10.6	.16															
BCD21632	250.00	251.50	1.50	.010	.02	.02	2.0	.11															
BCD21633	251.50	252.80	1.30	.011	.01	.01	1.0	.21															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
BCD23058	36.00	37.50	1.50	74.53	7.67	3.87	3.38	.02	.14	.325	.15	.33	.055		61	48	66	94.76	5	61	1.2	66	.12				79	2
BCD23066	62.00	64.80	2.80	85.81	6.38	.39	.61	.01	.01	3.09	.01	.26	.195		21	406	91	98.41	10	122	.8	91	.03				114	1
BCD23071	93.30	95.20	1.90	42.67	13.95	8.889	7.79	.37	1.31	9.095	.48	1.54	.100		447	144	68	89.37	20	64	1.3	165	.33				258	8
BCD23073	125.00	127.00	2.00	34.05	13.05	11.19	8.62	.45	.85	10.05	.32	1.20	.100		107	101	29	81.81	15	606	1.1	68	.40				209	6
BCD23116	156.60	158.60	2.00	81.15	7.965	.4162	.662	.017	.01	5.07	.01	.424	.150		32.49	63	29	57.37	156	.51	0.5	29	.02				176	1
BCD23121	190.00	193.00	3.00	28.98	10.75	15.62	8.52	1.17	.38	8.78	.23	1.24	.050		67	63	53	77.37	10	101	1.6	53	.45				145	8
BCD23123	215.60	217.60	2.00	57.00	17.10	1.48	2.74	.51	2.90	6.85	.44	.83	.140		106	58	46	91.38	5	184	.6	46	.11				95	1
BCD23125	226.80	228.80	2.00	87.87	4.63	.91	.56	.01	.01	2.68	.03	.17	.045		20	22	19	98.38	5	77	.5	19	.03				65	1
BCD21630	243.00	245.00	2.00	58.67	16.97	.74	2.60	.47	2.87	7.42	.37	.89	.125		76	119	50	91.72	5	146	.5	50	.08				53	1
BCD21631	248.00	250.00	2.00	33.55	12.58	11.39	8.37	.67	.95	10.55	.68	1.20	.065		84	87	188	82.10	20	75	1.2	188	.37				245	11
BCD21634	276.10	279.10	3.00	57.23	16.61	2.48	2.63	.21	2.99	6.65	.45	.84	.165		60	111	52	90.75	5	143	.3	52	.11				60	1
BCD21635	289.50	291.50	2.00	48.77	14.84	6.12	4.56	.91	1.26	10.03	.46	1.54	.105		58	113	78	90.20	5	107	.7	78	.24				37	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG296 | IMPERIAL UNITS: | METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION:

PLOTTING COORDS GRID: Mine
NORTH: 589.00N
EAST: 9515.00E
ELEV: 1491.08

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

COLLAR DIP: -89°30' 0"
LENGTH OF THE HOLE: 317.90m
START DEPTH: 0.00m
FINAL DEPTH: 317.90m

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

DATE STARTED: 0, 0
DATE COMPLETED: September 18, 1989
DATE LOGGED: September 20, 1989

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

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

CONTRACTOR: Atlas
CASING: PULLED
CORE STORAGE: Samex Camp

PURPOSE: UTM 3504.129E/69959.166N/1491.079el.

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
9.10	-	-89° 0'	ACID	OK		-	-	-	-	-	
9.11	-	-89° 0'	ACID	OK		-	-	-	-	-	
53.30	-	-87° 0'	ACID	OK		-	-	-	-	-	
86.80	-	-86° 0'	ACID	OK		-	-	-	-	-	
126.50	-	-86° 0'	ACID	OK		-	-	-	-	-	
163.10	-	-85° 0'	ACID	OK		-	-	-	-	-	
196.60	-	-85° 0'	ACID	OK		-	-	-	-	-	
233.20	-	-84° 0'	ACID	OK		-	-	-	-	-	
263.70	-	-82° 0'	ACID	OK		-	-	-	-	-	
288.00	-	-80° 0'	ACID	OK		-	-	-	-	-	
311.80	-	-80° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 3.27	«Casing»					
0.00 TO 210.90						
3.27 TO 42.20	«Dol Maf Lap Tuff» dolomitized mafic lapilli tuff	- Dark green-grey with creamy lapilli. - Moderately qtz veined (1-3cm), usually 70-90 to cia.		-Mod - intense dolomitization, esp. rimming around lapilli and lapilli themselves. -Mod. chloritized matrix.	-Py tr-3% (assoc. w/dolomitization?)	
	3.27-17.7	- dol. maf lap tuff, as described above. - lapilli strached at 45 to cia.	45			
	{17.7-18.0}	«Fault» - fault bx consists of maf lap tuff and white qtz (vein)				-Qtz fault bx may come underlying qtz flooding/veining.
	{18.0-19.5}	«QTZ VEIN» - White qtz, highly broken core; one piece contain Gal/Py, but no possible to see full width of sulphides in core.			«Gal 10%, Py 7% over 10 cm»	18.0-19.5m: Highly broken core; poor recovery (50-80%)
	19.5-42.2}	- Dol. maf lap tuff; dk green matrix with creamy yellow lapilli.		- Mod. - intense dolomitization		
42.20 TO 89.70	«Maf Lap Tuff»	Dark green -Overall, Lt. green lapilli frags (1-5+cm) supported by dk. green matrix. -Lt. qtz veining, increases near bottom of interval. -Lapilli generally streched at 45 to C.A.		-Lt to Mod. chloritized		
	{44.6-44.7}	«Qtz-Carb Flooded» -10 cm section of qtz-calcite with blebs of py & cp.		«Py 5%, Cp 5%»d		
	{76.2-86.7}	«Qtz-Carb Veining» -increased qtz-calcite, veining; barren; 0.3-4 cm wide; approx 90 to C.A.				
	{86.7-89.7}	«Dol-Ser Maf Lap Tuff» -local qtz flooding, which may silicify previous		-Lt. to Mod dolomitization. -creamy yellow lapilli which are quite		

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		serecitization.		hard but do not stain blue; is this "silicified serecite?		
89.70 TO 90.80	«Maf Ital Tuff»	Lt Olive green -massive; local qtz - calcite veining -fractures (cleavage) at 60 to c.a.	60		-Py tr. on fracture (clvg) surfaces.	
90.80 TO 96.00	«Dol-Ser Maf Lap Tuff» dolomitiz-ation - serecitized mafic lapilli tuff	Olive to dark green. -Olive green lapilli, dk green matrix.		-Dolomitization, lt to mod, particularly rimming lapilli. -Serecitization, lt. - mod, of lapilli -Matrix is becoming less chloritized & more serecitized.	-Py tr - 5%	
	{93.6-93.7}	«Qtz Flooding»			«Gal 3%, Py 7%»	
96.00 TO 97.20	«Qtz Vein»	-White; tr fushsite(?) -Sheared toward bottom of interval; brecciated at top of vein.			«Py tr - 2%»	
97.20 TO 98.00	«Shear»	-Lt. green; brecciated and sheared mafics; 45 to c.a.	45	-tr.fuchsite.	-Py tr.	
98.00 TO 108.50	«Fault Zone»	-Fairly broken core, often sheared & brecciated; some fault gouge. -Fault occurs entirely in maf lap tuff				
108.50 TO 114.20	«Maf Lap Tuff»	-Highly fractured; locally qtz - flooded over 5-10 cm intervals -Some brecciated sections in qtz veining.				
	{113.6-114.2}	«Qtz - calcite w/sx» -Qtz calcite with sulphides. -Veining/Flooding has brecciated the mafics. -Qtz calcite flooding possibly related to under-lying fault?			«Gal 5-7%, Cp tr, Sp tr, Py 3%»	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG296 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
114.20 TO 115.40	«Faults»	-Some fault gouge in upper half of interval, underlain by shear at 45 to c.a.	45			
115.40 TO 149.00	«Maf Lap Tuff»	-Lt. to dk green -Local 10 cm qtz - calcite flooded sections with up to 5% py.		«Local Dol» -Local dolomitization. -Chloritized fractures (in tuff matrix)		
	{133.7-134.1}	«Fault» -Small am't fault gouge & broken core				
	{134.6-134.9}	«Faults» -Small am't fault gouge & broken core.				
		136m: near hinge of fold (?);"M" Shaped folds in qtz-calcite veins.				
	{138.8-139.3}	«Qtz - Calcite/Dol Vein» -Qtz - Calcite/Dolomite vein (or flooding) -White, with patches of sulphides & mafics			«Gal 2-3%, Py 2%»	
	{139.3-139.9}	-Mafic lapilli tuff		-Lt. to mod. dolomitization & serecitization.		
	{139.9-140.0}	«Qtz - Carb Vein» -Qtz, calcite, and dolomite			«Cp 2%»	
149.00 TO 157.60	«Sheared/ folded maf»	-Highly folded, sheared & qtz - carb veined; some sections of mafic lapilli tuff, other sections of possible xtal/ash tuff. -Some brecciated sections -Shear parallel to fold axial plane at 40 to c.a.	40	«Py 2-5%»		
157.60 TO 184.40	«Chlor-Ser Maf Tuff»	lt. green & white -Chloritized & serecitized mafic tuff; none of the original remains. -Calcite flooded/veined prior to shearing -Sheared at 60 to c.a.	60		-Py tr - 1% throughout most of section; increases to 3-5% in sections close to bottom of interval.	
		-Galena begins to appear in small am'ts towards bottom of interval.				
	160.1-168.7	-Generally more brecciated. -Qtz - carb stringers are boudined & disrupted.				
	{178.3-	-Qtz carb flooded mafic ash tuff		-Chloritized mafic tuff.	«Gal tr 2%. Py 1-3%»	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	184.4}			-Some rusty sericite towards bottom of interval.		
184.40 TO 207.10	«Ser Dol Maf Lap Tuff»	-Lt. to dk green. -Qtz-carb veined. -Some 10 cm faulted intervals.		«Ser - Dol Lap» -Sericitized & dolomitized lapilli	«Py 1-3%, Gal tr»	
	{185.0-185.2}	«Qtz-Carb flooded»			«Gal 2%, Py 1%»	
	{198.1-198.5}	«Fault» -Qtz-carb flooding & fault gouge; highly broken core.				
	{199.5-207.1}	-Maf lap tuff looks slightly bleached & sheared at 40 to c.a.	40	«Incr Ser» -Increased sericitization of lapilli		
207.10 TO 209.00	«Wacke/ Grit»	-Fine grained, lt. grey wacke with some sections of qtz/wacke grit (possibly brecciated?) -Qtz-carb veined (veins are disrupted)		-Dolomitized		-Correlate w/wacke - grit unit at bottom of mafics in RG 292
209.00 TO 213.30	«Fault					
TO 210.90						
TO 213.30	Zone»	-Fault gouge and bx. -Some pieces of wacke, some laminated & brecciated chert/argillite. -Cht/arg in bottom half of fault zone.				
213.30 TO 220.90	«Ser-Dol Cht/Arg»	White-yellow-lt.grey -Sericitized & qtz - dolmite flooded chert and argillite. -Some lams & sections of non-sericitized argillite visible near bottom of interval. -Banded at 45 to c.a. (parallel to shearing?)	45	«Ser-Dol» -Sericitized & dolomitized. -Qtz-Carb flooded	«Py 5-10%. Sp tr 3%. Gal Tr» -Sp (honey coloured) in blebs up to 3% over 20 cm intervals. -Py in v. fine grained lams (at 45 to c.a.	
220.90 TO 289.90	«Mut»	-"Muddy Tuff" -Silver grey colour (of sericite?) -Looks sheared & brecciated at approx. 30 to 60 to c.a.				
	{229.4-	«Shear» in Mut				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
	231.5	at approx 50 to c.a.	50			
		233.5: laminated at 70 to c.a.	70			
	235.3-	«Fault»				
	235.9	-Silver/grey failt gouge;				
		some shearing at 90 to c.a.	90			
	236.3-	«Fault»				
	236.5					
	242.2-	«Faulted»				
	244.0	245.7m: laminated at 30 to c.a.	30			
	246.7-	-Dissem. sulphides in Mut "			«Sp & Cp & Gal & Py	
	248.0	252.9m: laminated at 40 to c.a.	40		Tr - 3% »	
					-i.e. total sx = tr 3% over 10 cm	
					intervals.	
	262.0-	«Faulted»				
	267.7	-and sheared at 45 to c.a.	45			
		-some 10-20 cm sections of silvery fault gouge.				
	269.9-	«Sheared»				
	270.7					
	270.8-	«Qtz Vein/Flood»			«Gal Tr, Py, Tr - 2% Cp, Tr, Sp Tr»	
	276.9	-With some remnants of Mut caught up.				
		-Local dissem & blobs of sx.				
	271.6-	«Faulted»				
	272.0					
	276.9-	«mut & sx»		«Rusty Ser»	«Py 20-40%, Sp Tr, Gal Tr»	
	279.3	-Mut with lots of sulphides (mainly Py)		-Rusty Sericite		
		-Silvery grey colour		-Fuchsite(?) in blebs & along fractures		
				-+ gret serecite.		
	279.3-	«Ser Cht - Arg»		«Rusty Ser»	Py 2-3%	
	283.6	Serecitized chert & argilltie				
	283.6-	«Mut + Sx»		-Silver serecite	«Py 5-30%»	
	289.9	-Mut with local abundant sulphides (PY)				
		-Silvery grey colour				

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
289.90 TO 296.20	«Qtz Flooding»	-White Qyz with local blebs & fine grained disseminated sulphides			«Py 2-5%, Gal 1% Sp Tr»	
296.20 TO 307.00	«Cht-Arg»	Black & Grey -Laminated & brecciated black argillite and grey chert. -Mod intensly qtz flooded and veined. -Controled & chopped up laminations			«Py 1-5%; Varies locally over 10 to 20 cm intervals.	
307.00 TO 316.00	«Dol Seds»	-Dolomitic sediments; brecciated with grey chert at top of interval; fine grained & highly dolomitic at bottom.		«Dol» -Rusty serecite	Py Tr	
316.00 TO 317.90	«Chr-Arg»	Black & Grey -Originally laminated; laminations now distupted & chopped up.				
317.90 TO 319.80		E.O.H.				

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
23501	18.00	19.50	1.50	.016	.12	.53	2.1	.17															
23505	91.40	93.00	1.60	.009	.02	.02	1.7	.18															
23506	93.00	94.00	1.00	.012	.37	.21	2.3	.10															
23508	96.00	97.20	1.20	.009	.03	.09	2.0	.07															
23509	113.60	114.20	0.60	.170	.92	1.78	1.6	.03															
23511	138.60	139.60	1.00	.008	.01	.01	14.0	.01															
23512	139.60	140.60	1.00	.027	.30	.26	3.7	.02															
23515	199.00	200.50	1.50	.042	.16	.02	2.0	.02															
23516	200.50	202.00	1.50	.026	.59	.16	2.2	.01															
23517	202.00	203.50	1.50	.006	.02	.01	1.7	.01															
23518	213.30	214.80	1.50	.001	.01	.01	2.0	.02															
23519	214.80	216.30	1.50	.002	.01	.02	1.5	.01															
23520	216.30	217.80	1.50	.071	.29	.12	12.2	.03															
23521	217.80	219.30	1.50	.002	.01	.01	1.8	.02															
23522	219.30	220.80	1.50	.021	.15	.03	4.1	.01															
23523	220.80	222.30	1.50	.034	.13	.19	10.2	.02															
23524	222.30	223.80	1.50	.015	.01	.01	4.2	.01															
23551	245.20	246.70	1.50	.012	.07	.02	8.0	.02															
23552	246.70	248.20	1.50	.024	.86	.43	14.2	.07															
23555	264.30	270.00	6.50	.003	.02	.03	1.5	.10															
23554	270.80	272.30	1.50	.002	.05	.06	1.6	.05															
23556	272.30	273.80	1.50	.002	.01	.02	1.7	.03															
23557	273.80	275.30	1.50	.001	.01	.01	1.6	.01															
23558	275.30	276.80	1.50	.001	.04	.06	1.5	.01															
23559	276.80	278.30	1.50	.004	.01	.01	1.1	.01															
23560	278.30	279.80	1.50	.002	.01	.01	0.4	.14															
23561	288.40	289.90	1.50	.102	.36	.09	7.2	.41															
23562	289.90	291.40	1.50	.020	.20	.10	4.3	.24															
23563	291.40	292.90	1.50	.001	.01	.03	0.8	.05															
23564	292.90	294.40	1.50	.002	.01	.01	0.6	.01															
23565	294.40	295.90	1.50	.011	.04	.02	0.5	.02															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
23502	19.50	22.50	3.00	39.52	12.86	6.83	10.64	.89	1.80	9.99	.21	1.25	.070		99	204		84.82	5	118	1.5	76	.31				60	1
23503	53.30	56.30	3.00	39.54	13.24	7.80	11.13	2.35	1.34	11.14	.21	1.31	.125		97	120		88.84	5	1159	4.2	722	.33				1	1
23504	89.70	90.80	1.10	40.86	12.69	7.32	8.77	2.80	1.48	10.06	.22	1.65	.080		76	101		86.83	35	93	1.5	66	.30				21	1
23507	94.00	96.00	2.00	44.47	12.65	8.44	7.14	.74	3.56	8.45	.31	1.31	.460		79	130		91.13	25	218	1.5	76	.30				146	1
23510	124.50	127.50	3.00	41.11	13.54	7.79	10.69	2.77	.10	10.55	.18	1.34	.130		100	104		88.63	5	1225	2.3	72	.35				1	2
23513	159.80	162.80	3.00	31.57	11.87	17.51	8.92	.60	1.50	9.25	.25	.90	.060		44	87		85.23	10	126	1.0	62	.49				1	2
23514	180.30	183.30	3.00	34.55	14.76	9.45	11.65	.19	1.71	12.38	.33	1.50	.050		73	338		89.80	10	64	.7	342	.38				1	2
23525	223.80	226.80	3.00	68.02	12.37	.22	.77	.39	2.92	6.14	.04	.47	.165		263	708		98.664	5	117	7.8	336	.06				90	139
23553	253.80	256.80	3.00	50.36	21.42	.28	.95	.72	5.00	8.02	.02	.96	.170		537	800		98.47	80	136	5.5	266	.09				123	199
23566	300.20	303.20	3.00	80.57	5.64	2.38	1.57	.17	1.39	2.11	.12	.30	.090		35	45		95.90	5	105	.2	29	.09				11	1
23567	305.30	312.30	3.00	32.84	12.12	13.84	6.82	1.10	1.84	8.12	.21	1.10	.060		97	53		79.17	10	47	1.5	57	.41				140	5

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG297 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION:

PLOTTING COORDS GRID: Mine
NORTH: 736.00N
EAST: 10474.00W
ELEV: 1160.51

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 295.30m
START DEPTH: 0.00m
FINAL DEPTH: 285.30m

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

DATE STARTED: September 17, 1989
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: Atlas
CASING: L.I.H.
CORE STORAGE: Samex Camp

PURPOSE: 50 m step forward from RG295 towards grid south. UTM 2878.935E/70699.844N

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
60.70	-	-53° 0'	ACID	OK		-	-	-	-	-	
96.30	-	-51° 0'	ACID	OK		-	-	-	-	-	
138.60	-	-52° 0'	ACID	OK		-	-	-	-	-	
173.40	-	-52° 0'	ACID	OK		-	-	-	-	-	
217.00	-	-53° 0'	ACID	OK		-	-	-	-	-	
255.10	-	-52° 0'	ACID	OK		-	-	-	-	-	
152.40	223° 5'	-54° 0'	TRO-PARI	OK		-	-	-	-	-	
274.30	219° 0'	-48° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 31.10	«Csg»					
0.00 TO 256.80						
0.00 TO 246.10	& Arg»					
31.10 TO 64.80	«Ser Cht & Arg Mut»	Yellow to grey, fine. -Very intense Ser, which is a yellow to pea green in colour in ragged patches surrounding siliceous seams; probably recrystallized chert. and qtz-dol veining. Very wary foliation	45 70	A few black argillaceous windows with stood the ser/sil alteration, which is elsewhere very strong. From 47-48 and 55-56 the sericite is silver-brown and resembles that found in "Mut" although only 5% py.	2-3% in wispy disseminations except in "Mutlike" portions where py slightly el evated.	{57.0 - 58.3} «Flt gou, 15% rec.» {70.0 - 66.0} «Flt bx» Note: near the border between yellow sericitic and "Mut" pyritic/sericitic alteration zones?
64.80 TO 81.60	«Chert»	Dark Grey to white. Aphen to fine. "Marker" competant chert. Locally highly fractured and healed by white "hazy" qtz veinlets. Also partially recrystallized. First 2 meters is fault brecciated with foliation at 65 degrees. Remainder is contorted but contains no penetrative foliation	65	Silicified	1-2% fracture filling except for a seam of fine pyrite from 75.3-75.4 assoc. with silica flooding	Qtz stockwork, and flooding Is this a "Chert Knob" &/or a silicified breccia pipe?
81.60 TO 88.00	«Dol Cht & Arg»	Grey to brown. Knife sharp contact at 75 degrees with pervasive dolomitized contorted chert & arg. Warped foliatio n at 65 - 80 degrees. Possibly some silty to wache beds.	75	Strongly pervasive dolimitization decreasing downhole. Brown sericite becomes fuchsitic at lower contact.	1-2% diss. Py	Strange nodular alteration texture at 85 m. Altered wacke?

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
88.00 TO 91.30	«Fuch Cht & Arg»	Grey to green grey. Fine. Gradational contact expressed by sericite becoming fuchsitic, and dolomite decreasing. Downhole this unit becomes more pyritic. Foliated	70	Strong sericite, fuchsite, and silicification.	Increases downhole from 3% to 15% {90.5 - 91.3} «Fuchsite, 15% py»	
91.30 TO 95.20	«Sil Cht & Arg & Qtz Veins»	Silicified, contorted and brecciated chert and argillite. Contains 1-2 cm thick, fine pyrite seams and one 0.5 m semi-numerous qtz veinlets cut the sequence.		Silicification assoc. with 1-10 cm qtz veinlets and flooding, throughout this interval. Traces of talc and yellow sericite locally.	{93.2-93.7} «Smsx, 25% py, 1% cp» The pyrite is milled up and in a silica and argillite gargue. Overall the rest of the interval has 5% py.	266 Zone? {95.1-95.2} «Flt gouge»
95.20 TO 134.50	«Ser Cht & Arg + Mut»	Pale Yellow & grey. Fine. Upper contact at 60 degrees immediately below a friable gouge. Unit is a very pale yellow sericitic altered contorted sediment package with patchy "Mutlike" sericite-pyrite alteration very much subordinate, but present right to the end of the interval none the less. Foliation at 60 degrees throughout.	60	Strong pervasive fine grained pyrite assoc. with silica flooding. Unit contains numerous irregular patches and veinlets of quartz (+carb) Overall 5% pyrite.	{101.8-107.0} «Flt Zone:gouges & flt bx» Two litho samples 1. Predominantly sericitic alteration (#23529) 2. As much as 25% mutlike patches (#23530)	
134.50 TO 146.50	«Cht & Arg»	Black & grey. Aphen. Laminated to thinly bedded, contorted competant cherty argillite. Much of the laminations go down core axis until snapped and imbricated, possible defining a fold nose. Very resistant to penetrative foliation. Chert dominated argillite by proportion (70% & 30% respectively) Foliation weak from 50-80 degrees both contacts faulted.	50 80	Some silicification but not a hint of sericite. From 141 to 145 white qtz veinlets are common (5-10 cm) with hazy, silicified margins. One veinlet contains a trace of aqua-coloured talc.	Argillaceous portions contain dissem. py, some as euhedra. Chert and veins contain py only as fracture fillings and small stringers. Overall 2-3% py.	{134.5-137.4} «Flt gou & bx» {134.5-137.4} «Fold nose?» {144.9-145.3} «Flt gou.» {146.3-146.5} «Flt gou ' bx»
146.50 TO 152.60	«Mut? & Dol Seds»	Brown to grey. Very pyritic, silicified and sericitic sediments Resemble "dol seds" but contain only minor Fe-dolomite, and promarliy silica in patches and veinlets.		Pervasive sil. with brown sericite completely altering the protolith, along with intense pyritization.	Fine grained patches and seams of pyrite up to 10 cm wide. Small amounts are milled up py "Balls" up to 1 cm. Overall 15-20% py	Possibly silicification and pyritization over printing dolomitization of chert and argillite.
152.60 TO 209.60	«Dol Seds»	Brown & grey. Fine. Gradational contact with silica decreasing and Fe-Dolomite increasing. Pyrite content has also decreased to 1%. Fairly typical dol.seds with patchy flooding,		Pervasive ferro-dolomitization, accompanied by brown sericite. Also widely spaced dol (+- qtz) in] veinlets and patches.	1-2% diss py	{185.4-185.5} «Flt gouge»

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		brown sericite, and only faint relict contorted sed textures. Foliation 70 degrees on avg.	70			
209.60 TO 231.00	«Cht & Arg»	Black & grey. Aphan. Thin 1 cm gouge at contact. Black argillite and chert, very contorted and locally brecciated, apparently tectonically strongly foliated. Gradational lower contact.	70	Minor silicification assoc. with qtz veinlets from 209.6-211.5. Form 215.6-219.4 there is weak, yellow sericitization related to qtz dol veins	1% diss py	{214.2-215.6} «Flt bx»
231.00 TO 243.90	«Cht & Arg bx»	Black & grey. Extremely strongly foliated with stretching to paper thin clasts wider than the NQ core. Black argillaceous matrix with cherty clasts	70	Local sericite assoc. with qtz veinlets rare. From 241.8 we have appearance of short bands of light green (chloritic?) material, possibly mafic ash tuff.	Tr py	Correlatable breccia unit.
243.90 TO 245.00	«Alt Mpyro?»	Green. Fine. Interband of light green material, with still some argillite. Possibly an ash tuff. Dominant over this interval but present in minor amounts for 1-2m on either side. Foliation	65	Chloritic and weak sericitic	tr py	
245.00 TO 257.20	«Sil Cht & Arg»	Black & grey. Fine. Contorted unit with some minor bx. Int is silicified veined, and faulted. Foliation	70	Silicification assoc. with white bully qtz veins, now badly broken up within flt bx. Some silver sercite and mild "Mutlike" alt from 252-253.5	2-3% pg From 255.5-257m a bully white qtz dol vein runs along the core axis and has a speck of galena	{246.5-251.5} «Flt bx & gou»
257.20 TO 270.00	«Alt Maf Lap Tuff»	Light green. Knife sharp contact with grey sediments. Visible relict lapilli are strongly sericitized, while mafic matrix contains minor black chlorite clots and sericite, pyrite and strong pervasive fe-dolomitization		fe-dolomitization with sericite, black chlorite and pyrite. Decreases gradationally at lower contact.	{257.2-258.5} «5% py, 1% pb, tr sp, tr cp» assoc with very widely spaced dol-qtz v einlets and patches.	correlates with "chloritic stringer zone" of previous 255 zone holes.
270.00 TO 285.30	«Mafic lapilli tuff»	green. fine to med. Typical mafic lapilli tuff with dark green matrix and slightly lighter green stretches lapilli (5:1) Mod. Foliation	65 75	Weakly limy, cut by this qtz-calcite veinlets widely spaced	tr pg	

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
21644	75.20	76.10	0.90	.001	.02	.01	0.9	.02															
21646	89.30	90.50	1.20	.001	.04	.02	0.4	.06															
21647	90.50	91.30	0.80	.003	.14	.06	2.1	.14															
21648	91.30	92.20	0.90	.001	.02	.01	0.4	.22															
21649	92.20	93.20	1.00	.022	.12	.04	2.1	.07															
21650	93.20	93.70	0.50	.302	4.74	.48	16.2	.49															
23526	93.70	95.20	1.50	.001	.04	.02	0.8	.12															
23527	95.20	96.20	1.00	.024	.87	.02	1.5	.21															
23532	146.50	148.00	1.50	.012	.04	.01	1.8	.05															
23533	148.00	149.50	1.50	.009	.03	.01	1.9	.14															
23534	149.50	151.00	1.50	.028	.05	.01	2.5	.39															
23535	151.00	152.60	1.60	.024	.06	.01	2.3	.22															
23536	152.60	154.10	1.50	.004	.10	.01	2.2	.05															
23541	255.50	257.20	1.70	.001	.09	.02	0.8	.01															
23542	257.20	258.00	0.80	.022	.34	.19	2.1	.02															
23543	258.00	259.50	1.50	.018	.40	.20	3.6	.02															
23544	259.50	261.00	1.50	.034	1.02	.13	2.6	.03															
23545	261.00	262.50	1.50	.040	2.17	.40	4.0	.02															
23546	262.50	264.00	1.50	.023	.67	.54	4.4	.01															
23547	264.00	265.50	1.50	.012	.20	.09	2.5	.02															
23548	265.50	267.00	1.50	.001	.04	.01	1.4	.01															
23549	267.00	268.50	1.50	.002	.03	.01	1.8	.02															
23550	268.50	270.00	1.50	.004	.02	.01	2.0	.01															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
21641	51.30	54.00	2.70	61.57	15.11	.47	2.17	.36	3.85	6.95	.25	.82	.165		73	161		94.93	10	119	.9	76	.07				145	2
21642	55.00	56.00	1.00	60.70	16.35	.45	1.74	.36	4.27	6.87	.18	.73	.190		28	71		95.82	5	171	.6	36	.09				117	2
21643	70.50	72.80	2.30	89.19	4.22	.40	.40	.08	1.05	2.17	.02	.18	.075		44	407		99.19	15	119	1.8	178	.02				91	17
21645	81.60	84.10	2.50	39.27	12.45	8.08	8.55	.33	2.34	9.49	.66	1.54	.125		50	61		86.93	30	96	.4	30	.35				330	1
23528	96.20	99.30	3.10	64.44	16.54	.17	1.28	.37	4.12	6.17	.14	.73	.130		38	52		97.63	5	120	.3	37	.06				71	1
23529	115.50	117.40	1.90	59.85	17.07	.58	2.02	.41	4.18	6.48	.35	.94	.125		31	229		94.35	10	188	.7	196	.06				242	11
23530	119.70	121.40	1.70	68.43	12.71	1.13	.82	.30	3.06	5.77	.09	.89	.155		49	99		96.93	5	114	.4	52	.06				100	1
23531	119.70	121.40	1.70	68.43.	12.71	1.13	.82	.30	3.06	5.77	.09	.89	.155		49	99		96.93	5	114	.4	52	.06				100	1
23537	170.00	173.00	3.00	48.55	8.20	9.55	5.73	.62	1.13	9.54	.59	1.00	.045		74	61		86.71	15	60	1.4	75	.30				223	9
23538	200.00	203.00	3.00	34.91	10.35	12.79	7.96	1.14	1.12	9.10	.51	1.20	.055		179	252		85.33	20	48	1.5	209	.40				482	15
23539	228.40	230.40	2.00	70.24	9.48	3.18	3.08	.03	2.13	4.18	.13	.42	.165		45	80		93.47	5	88	.6	66	.11				75	2
23540	252.00	253.90	1.90	58.14	13.45	2.53	3.78	.67	2.82	7.03	.45	.65	.105		40	72		90.22	5	167	.8	33	.15				47	1
23576	279.00	282.00	3.00	39.42	12.21	11.91	7.43	3.07	.17	9.53	.16	1.32	.095		84	88		85.69	5	758	3.4	50	.34				43	5

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG298 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: Pit

PLOTTING COORDS GRID: Mine
NORTH: 53737.00N
EAST: 9506.00W
ELEV: 1492.49

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

COLLAR DIP: -89° 0' 0"
LENGTH OF THE HOLE: 346.40m
START DEPTH: 0.00m
FINAL DEPTH: 346.40m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: September 30, 1989

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

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

CONTRACTOR: Atlas
CASING: L.I.E.
CORE STORAGE: Samex Camp

PURPOSE: Hole "C" on highest level above pit.

DIRECTIONAL DATA: UTM 3472.582E/69908.143N/1492.486el

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
10.97	-	-88° 0'	ACID	OK		-	-	-	-	-	
53.00	-	-83° 0'	ACID	OK		-	-	-	-	-	
95.70	-	-83° 0'	ACID	OK		-	-	-	-	-	
117.60	-	-82° 0'	ACID	OK		-	-	-	-	-	
178.60	-	-82° 0'	ACID	OK		-	-	-	-	-	
232.80	-	-76° 0'	ACID	OK		-	-	-	-	-	
288.30	-	-78° 0'	ACID	OK		-	-	-	-	-	
331.60	-	0° 0'	ACID		Bad Etch.	-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 4.20	«Casing»					
4.20 TO 102.40	«Mpyro»	Green. Fine Grained. Typical mafic Lapilli tuff sequence sericitic lapilli (2-6 cm) matrix supported.	60	«2-5% Qdv & Qds»		Stretched and flattened lapilli homogenous sequence.
		{4.2-13.4}		«Strg lim stain»		Broken core poss flt.
		{78.0-83.5}				«flt gouge»
		{87.2-89.5}				«flt» 20% Qdv.
		{89.5-93.6}		«Strong ser. lapilli»		Rust colour sericite
		93.6-102.4				Broken core
102.40 TO 150.20	«MT»	Dark green. Fine grained. Finely laminated, strongly chloritic in upper levels. Absence of discrete lapilli. Pre foliation (?) Qtz carb. alt'n gives and almost clastic appearance.		«30% Qtz-Carb. String»	1-2% F.G. diss py»	Note the following carbonate/sericite zonations.
		{109.1-124.0} «Carb'd mt»		«>20% calcite» calcite flooding		gives clastic or lapilli appearance.
		{124.9-139.0} «Ser Mt»		«>25% Dolomite» pervasive lime green sericite		Laminated appearance.
		139.0-146.0} «Dol Mt» Strongly altered.		«>35% Qtz-Dol» Pervasive rust brown sericite with 10 cm intervals of black chlorite	{145.0-145.7} «Tr Gn, Spg, Gn» Assoc with Qdv.	Cherty sections
		{146.0-149.6} «Ser Mt»		Pervasive pale green to yellow sericite, small folded qtz-veins.	«>10% Py» Banded	Qtz vein at basel contact. Semi cherty interval.
		{149.6-150.2} «Fuchsitic»		«>15% Fuch»	«>20% Py»	Fault contact - (small gouge 2 cm) with basel mt.
150.20 TO 182.00	«Mut»	Grey. F.G. to M.G. Siliceous and pyritic muddy tuffs, respectively moderately laminated to brecciated textures.		Range in pyrite content from 1-2% to >40% from top to base of interval. (5-10% Grey Ser)		Note zonation in pyrite (Fe) content.
		{150.2-174.0} «Sil Mut» Siliceous, low pyrite 10 cm pyritic bands.		«5-10% Py»		
		{174.0-182.0} «Py Mut»		«>40% Py F.G.»		Pyrite bands appear crosscutting

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
182.00 TO 190.80	«Wcke & Arg»	Black and Grey F.G. to M.G. Quartzose wackes with lesser inter bedded, black argillites.	60		«1-2% Diss Py»	
		{182.0-183.6}		«>35% Qtz Carb String»		«Faulted contact»
		184.7 Bedding in argillite	20			Near fold axis
		{186.1} Grading «tops down»				
190.80 TO 211.60	«Mut»	Lt green to buff f.g. Sheared at top (Minor Bx) and laminated at base. Textures similar to above sediments.				{190.8-191.8} «Flt Gouge»
		{186.9-187.9} «Shears at 0 degrees»				
		{187.9-201.8} «flt'd»		«10% Qv»		Gouged and Bx'd
		{203.0-205.0} «Well Lam'd»				
		{206.8-207.9} «Qv»		Siliceous haloes	«1-2% Sph, Gn»	
		{207.9-211.6} «Chty Mut»		Strongly Silicified		
211.60 TO 217.10	«Qtz Stkwk»	White. Bull Qtz-Dol veins in muddy tuff		«90% Qdv»	«Clots of Sph, Gn»	
217.10 TO 254.20	«Ser Cht & Arg»	Yellow with Minor Grey F.G. Strong yellow sericite. Retains a weak laminat texture. Some grey slightly graphitic/Pyritic partings. >25% white Qtz bands and boudins.	60	«>25% Yellow Ser»	«5-10% Py Bands»	Sericite content reduced in lower sections. Transitional contacts.
254.20 TO 265.50	«Cht & Arg»	Black monir yellow intervals. F.G. Mixed chert and argillite with lesser sericitic zones. Highly contorted and brecciated at the base.		«Strong Graph» Graphitic partings	«1-2% Diss Py»	Small flt gouge at basel contact with Dol. Seds.
		{258.9-261.9} «Ser Cht & Arg»		«>25% Yellow Ser»		Monor dolomitization over 10 cm.
265.50 TO 285.90	«Dol Seds»	Rust to grey F.G. Intensely dolomitized with relict graphitic intervals.		«25% Rusty Ser» Pervasive. >4% Qdv with hazy boundaries.		Abrupt basel contact.

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
285.90 TO 346.40	«Cht & Arg bx»	Black Y.G. Contorted and brecciated laminae. Small 10-20 cm intervals of Ser & Dol alteration {297.5-302.0} «Sil Cht» Black		«10-30% Qv & Qs»	{300.1-300.2} «Tr Gn Cpy, Sph» in Qv.	{336.8-346.9} «Flt» Gouge & Broken 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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
23632	144.90	145.80	0.90	.140	2.23	1.56	14.6	.43															
23633	149.50	150.50	1.00	.003	.11	.02	2.5	.07															
23637	211.30	212.10	0.80	.036	.16	.10	4.2	.12															
23638	214.10	215.80	1.70	.001	.01	.01	0.3	.01															
23639	215.80	217.30	1.50	.001	.01	.01	0.6	.02															
23643	294.50	295.50	1.00	.003	.91	.76	8.0	.23															
23644	299.20	299.40	0.20	.030	.08	.05	2.3	0.7															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
23626	20.80	23.80	3.00	41.46	11.99	10.37	9.17	2.11	.01	9.70	.20	1.21	.025		76	85		87.08	5	172	1.1	65	.35				1	2
23627	46.00	48.70	2.70	42.47	13.11	8.53	9.57	3.81	.01	10.33	.20	1.24	.135		105	80		90.07	10	1220	2.8	69	.33				25	5
23628	72.20	75.20	3.00	40.46	13.19	8.45	10.39	2.29	.01	10.68	.18	1.32	.005		96	103		87.74	5	56	2.7	76	.35				1	7
23629	89.50	92.50	3.00	41.66	13.55	6.98	11.13	1.97	.01	10.60	.23	1.29	.005		102	112		88.28	5	34	.7	68	.32				1	4
23630	109.80	122.80	13.00	28.84	10.26	21.99	4.79	.21	2.03	7.17	.12	.90	.075		95	60		77.21	15	360	1.3	49	.42				47	2
23631	132.80	135.80	3.00	31.62	10.30	14.58	6.70	.54	2.46	8.19	.18	1.00	.295		53	51		78.88	10	210	1.0	62	.37				100	6
23634	158.40	161.40	3.00	78.10	8.14	.22	.26	.21	1.96	4.68	.02	.33	.400		84	189		98.86	730	401	7.0	126	.05				165	90
23635	177.80	180.80	3.00	39.51	24.58	.13	.19	2.20	3.79	15.48	.03	.91	.335		62	64		94.41	50	156	1.4	56	.10				151	6
23636	193.80	196.80	3.00	55.61	18.93	.47	.62	.44	4.57	8.58	.01	1.34	.735		32	89		99.21	60	320	1.1	75	.10				122	1
23640	221.60	224.60	3.00	59.25	16.37	.54	3.05	.46	3.61	6.60	.25	.69	.465		49	90		92.90	5	365	.3	44	.12				64	1
23641	240.80	243.80	3.00	59.46	17.14	.89	2.27	.52	4.15	6.32	.39	.80	.120		44	120		94.65	5	126	.1	92	.11				35	1
23642	280.70	283.70	3.00	36.32	12.42	11.07	8.68	.99	1.13	9.98	.25	1.15	.035		107	85		83.72	5	51	1.0	68	.36				80	7
23645	308.60	311.60	3.00	64.08	15.11	1.20	2.04	.25	3.68	5.63	.22	.71	.120		44	68		94.82	5	100	.2	46	.11				55	1
23646	330.90	333.90	3.00	58.27	14.74	3.61	33.3	.21	3.37	7.22	.17	.74	.190		25	33		93.82	5	72	1.4	18	.17				81	1

MINNOVA INC.
DRILL HOLE RECORD

IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 104+80 mW

PLOTTING COORDS GRID: Mine
NORTH: 691.00N
EAST: 10481.00W
ELEV: 1157.77

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 231.30m
START DEPTH: 0.00m
FINAL DEPTH: 231.30m

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

DATE STARTED: 0, 0
DATE COMPLETED: September 24, 1989
DATE LOGGED: September 25, 1989

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

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

CONTRACTOR: Atlas
CASING: L.I.H.
CORE STORAGE: Samex Camp

PURPOSE: 50 m grid south of RG297

DIRECTIONAL DATA: UTM: 2844.162E/70670.283N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
64.90	-	-50° 0'	ACID	OK		-	-	-	-	-	
96.00	-	-50° 0'	ACID	OK		-	-	-	-	-	
118.60	-	-50° 0'	ACID	OK		-	-	-	-	-	
118.90	-	-49° 0'	ACID	OK		-	-	-	-	-	
157.30	-	-48° 0'	ACID	OK		-	-	-	-	-	
190.80	-	-48° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 36.60	«OB»	From 33.5-36.6 mixed cobbles of gabbro, Qtz				Overburded. Casing only until 33.5
0.00 TO 237.70	Tuff					
TO 36.60		vein, and silicified chert.				
36.60 TO 49.00	«Arg & Cht»	Black & Grey F.G. Contorted laminated sediments, moderately foliated, and cut by widely spaced qtz-dol veinlet	55	Minor patchy sericitization assoc. with veinlets.	1-2% diss pg.	
49.00 TO 56.90	«Ser Sil Cht & Arg»	Pale Grey. Badly broken-up core consisting of yellow sericite schist, qtz (+-dol) veinlets, and silicified chert. Well foliated	65	Sericitization and silicification both intense.	1-2% diss. Pg	Only 50% recovery over this interval.
56.90 TO 71.40	«Dol seds»	Abrupt upper contact and interbanded lower contact. Pervasively dolomitized interval with minor relict laminated seds texture. Possibly some relict wacke beds. Weak foliation	65	Weakly fuchsitic aver first 1.3 m, and "nodular"(?) up to 60.7 m, with 5mm clustered round silica segregations. Sericitic throughout and pervasively Fe-dolomitized	2% py, except for first 1.3m where 5% pg.	"Nodular" alteration within dolomitized sediments.
71.40 TO 115.80	«Ser Sil Cht & Arg»	Grey, Yellow, White and black. fine. Patchy sericitization and silicification, with relatively unaltered cherty argillite remnants. Cut by sporadic qtz (+-dol) veins up to 10 cm wide .		Pale yellow sericite and silica flooding most intense from 100.0-115.8 Above this its patchy with contorted argillite seds remnant.	1-2% py except from 113.4- 115.8 where 5% pg in "Mutlike" patches within sericite.	{78.0-78.1} «Flt gou.»
115.80 TO 123.40	«Sil Cht»	Grey Fine. Distinctive competant chert, probably silicified chert and argillite, cut by weak stockwork of white qtz veinlets. Contorted and resistive to penetrative foliation	65	Silica flooding assoc. with qtz stockwork.	1$ diss, f.f. py	Fault bounded on both sides. {115.8-117.0} «Flt bx a5 70 degrees» {123.3-123.4} «flt gou.»
123.40 TO 171.40	«Dol Seds»	Grey & brown. Typical dol seds with brown sericitic wisps, dark grey fe-dolomite (+-qtz) patches, and psendogranular pervasively dolomitized chert and argillite.		This interval is not well foliated, with internal fabric in all orientations. Is dolomitization a late feature?	1-2% py except for first 3 m which has 5% py in this seams. Also 165-8-166.2 has 6% py assoc with silica flooding	{168.6-168.9} «Flt gou.» {171.3-171.4} «Flt gou.»

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		Variable foliation				
171.40 TO 175.90	«Sil Cht»					
TO 219.40		Grey Black & white Silicified cherty argillite, two 10-20 cm qtz vein lets. Very competant, siliceous interval foliated in black, formerly argillacious portions.	80	Pervasive silicification assoc with qtz veinlets.	2% diss and fracture filling pyrite.	{175.9-176.0} «Flt gou.»
175.90 TO 206.90	«Cht & arg»	Highly contorted to locally matrix supported bx. Black argillite and grey chert, with blocks of light green mafic tuff (?) over last 10m.		Short runs (0p to 3m) of sericitization assoc. with qtz-dol vein		{196.9-206.9} «Mafic tuff blacks in bx» {205.5-206.9} «Flt gou.»
206.90 TO 222.30	«Alt maf lap tuff»	Grey green. Relict lapilli tuff, dolomite flooded and cut by dil. str's containing py (+-gn, cp, sp) Contains dark green chlorite up to 214.5 m. then predominantly yellow sericite and fe dol with wispy "Mutlike" py wisps. Foliated and stretched	70 90	Dolomitized throughout with dark chlorite to 214.5 m, then yellow sericite dominates. The sericitization decreases down hole, preferentially altering the lapilli. The sericite is centered about qtz-dol veinlets from 217.5-218.4	{206.9-210.5} «5% py, tr. gn, cp, sp»	
222.30 TO 231.30	«Maf Lap Tuff»	grey green. Slightly sericitic lapilli in dark green, slightly limy matrix.		Cut by white calcite stringers widely spaced.	tr.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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
23578	55.40	56.90	1.50	.003	.12	.01	0.3	.05															
23579	56.90	58.20	1.30	.031	1.31	.53	10.2	.05															
23580	58.20	59.70	1.50	.002	.02	.01	1.7	.04															
23583	113.40	114.60	1.20	.003	.01	.01	0.2	.02															
23584	114.60	115.80	1.20	.002	.01	.01	0.2	.01															
23586	123.40	124.90	1.50	.011	.01	.01	0.4	.02															
23587	124.90	126.40	1.50	.010	.02	.01	0.3	.01															
23589	165.70	166.30	0.60	.009	.01	.01	1.6	.02															
23590	166.30	167.80	1.50	.007	.01	.01	1.0	.01															
23591	171.40	172.90	1.50	.002	.01	.01	0.4	.02															
23592	172.90	174.40	1.50	.002	.01	.01	0.2	.03															
23594	206.90	208.40	1.50	.038	1.52	.39	3.9	.01															
23595	208.40	209.90	1.50	.019	.38	.10	2.0	.01															
23596	209.90	210.50	0.60	.031	.69	.40	3.1	.01															
23597	210.50	212.00	1.50	.011	.16	.10	1.8	.01															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
23577	43.50	45.50	2.00	63.77	14.11	.62	2.31	.32	3.80	5.49	.28	.67	.150		71	75		93.42	10	70	.2	46	.10				69	1
23581	65.00	68.00	3.00	37.47	14.34	7.70	8.63	.43	1.86	9.58	.24	1.35	.045		96	92		82.32	5	38	.7	57	.31				52	5
23582	102.70	105.70	3.00	57.88	15.95	.21	3.12	.51	3.98	7.26	.51	.80	.095		90	59		90.88	5	62	.1	78	.11				30	1
23585	119.00	121.50	2.50	84.16	5.26	.39	.41	.17	1.30	3.58	.01	.31	.085		35	80		97.27	5	97	.5	76	.06				134	1
23588	142.00	145.00	3.00	35.82	13.27	12.11	6.44	1.08	2.61	8.60	.13	1.19	.100		73	59		84.25	10	121	1.0	58	.33				94	9
23593	179.80	182.80	3.00	61.51	14.64	.81	3.19	.30	3.59	6.44	.38	.75	.120		20	92		92.08	5	99	.1	91	.12				46	
23598	219.80	221.80	2.00	34.09	11.78	12.40	9.26	1.62	1.74	9.87	.31	1.32	.100		52	69		85.35	5	122	.9	70	.38				13	7
23599	226.00	229.00	3.00	36.52	11.19	14.63	7.33	1.85	.03	9.36	.16	1.25	.005		74	82		82.77	5	15	1.2	54	.36				22	2

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
23649	45.60	47.10	1.50	.002	.01	.01	0.2	.04															
23650	47.10	48.20	1.10	.004	.01	.01	0.2	.07															
23701	48.20	49.70	1.50	.004	.01	.01	0.2	.02															
23702	49.70	51.00	1.30	.003	.01	.01	0.3	.02															

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 6.10	«Casing»					
6.10 TO 41.70	«Mut»	Grey to Buff F.G. to M.G. A fairly competent section of different styles of muddy tuff. Short, relict intervals of unaltered seds. (Arg and Wacke) are common. {6.1-9.0} «Pymut» Strongly Pyritic Fol'n	20	«Wk Dol»	«>25% Py. F.G.»	Note rotation in foliation (S2 or C1?)
		{9.0-10.7} «Graph Arg»				«Gouged» Broken core, poor recovery.
		{10.7-11.5} «Sil Wcke»		«Sil Flood»		Transitional contact into muddy tuff.
		{11.5-41.7} «Mut» Grey to Buff colour. Relict fraph partings. Patchy alteration minor laminations Foliation	30	«Mod Dol» Podiform, semi clastic appearence. 5% Rust. Ser.	«5-7% Diss. Py»	
41.70 TO 45.60	«Sil Mut»	Dark Grey F.G. Moderately silicified muddy tuff. 1-5 cm relict silicified arg intervals competant. Foliaiton	30	«Mod Sil Flood»	«10-15% F.G. Py»	
45.60 TO 60.00	«Cht?»	Black & White Called chert for consistency only. More likely a silicified argillite. {52.7-54.5} «Cht & Arg Br»		«>50% white qtz» Hazey boundaries	«5-10% Py»	
60.00 TO 78.00	«Cht & Arg Br»	Black F.G. Strongly contorted and Br'd Small isoclinal folds Foliation	60	Early Qtz - Carb Stringers - 25%	Tr Py.	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG300 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: Pit Area

PLOTTING COORDS GRID: Mine
NORTH: 518.00N
EAST: 9894.00W
ELEV: 1328.55

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 78.00m
START DEPTH: 0.00m
FINAL DEPTH: 78.00m

COLLAR GRID AZIMUTH: 360° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 45° 0' 0"

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: October 2, 1989

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

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

CONTRACTOR: Atlas
CASING: Pulled
CORE STORAGE: Sarex

PURPOSE: Hole for additional Pit Testing

DIRECTIONAL DATA:

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
20.10	-	-88° 0'	ACID	OK		-	-	-	-	-	
47.50	-	-87° 0'	ACID	OK		-	-	-	-	-	

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
23649	21.80	24.80	3.00	45.85	17.57	6.71	5.10	1.53	2.04	6.70	.07	1.57	.155		36	185		88.34	5	323	1.3	79	.22				56	3
23650	33.40	36.40	3.00	37.49	16.22	10.41	5.05	1.63	2.18	7.44	.12	1.10	.175		28	340		82.84	5	208	1.5	62	.29				80	5
23703	68.20	71.20	3.00	63.28	11.91	2.24	3.40	.28	2.80	6.02	.37	.42	.150		45	74		91.57	5	105	.3	55	.14				60	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG301 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 104+80

PLOTTING COORDS GRID: MINE
NORTH: 835.00N
EAST: 10469.00W
ELEV: 1167.67

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 233.50m
START DEPTH: 0.00m
FINAL DEPTH: 233.50m

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

DATE STARTED: September 26, 1989
DATE COMPLETED: September 29, 1989
DATE LOGGED: September 30, 1989

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

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

CONTRACTOR: Atlas
CASING: L.I.H.
CORE STORAGE: Samex Camp

PURPOSE: 50 m grid north step back from RG295 on section 104+80mW.

DIRECTIONAL DATA: UTM 2949.054E/70776.881N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
78.00	-	-50° 0'	ACID	OK		-	-	-	-	-	
117.30	-	-49° 0'	ACID	OK		-	-	-	-	-	
163.40	-	-49° 0'	ACID	OK		-	-	-	-	-	
224.30	-	-50° 0'	ACID	OK		-	-	-	-	-	
233.00	223° 0'	-51° 0'	TRO-PARI	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 45.70	«Csg»	Mixed cobbles and bldrs.				
45.70 TO 60.50	«Mut»	Grey-brown fine. A good strong typical "Muddy Tuff" with sub-angular chert clasts abundant in a relict chert-argillite breccia. Strongly foliated and often fault gouged. Inter layered lower gradational contact zone from 56.5-60.5 with silicified cht-arg bx present.	75 - 80	Pervasive silver sericite and very fine grained pyrite alteration. Carbonate also present in thin seams (calcite & fe-dolomite) and flooding. Possible overlapping alterations?	10-15% pyrite overall, mainly as fine as dissem, but also in coarser grains in chert clasts pressure shadows.	{50.3-50.6} «Flt gou.» {55.4-55.5} «Flt gou.» {58.2-58.4} «Flt gou.»
60.50 TO 66.20	«Sil Cht & Arg»	Black & grey. Aphan. Intensely contorted to locally brecciated, very hard and competant silicified interval. Cut by hazy bordered white qtz veinlets. Clearly a silicified chert and argillite protolith although portions resemble "chert knobs" and "distinctive chert marker" from previous logs.		Pervasively silica flooded.	2-3% dissem. and fracture filling pyrite.	silica healed.
66.20 TO 69.70	«Fuch-Py Seds»	Bright green. Very distinctive interval of siliceous-fuchsitic-pyritic altered seds. Cut by widely spaced qtz veinlets. Schistose	80	Fuchsite-qtz schist.	5% euhedral, fine dissem. pyrite	Badly broken from 67.5 to 69.7 where only 60% rec. {68.6-69.7} «Flt gou.»
69.70 TO 76.30	«Sil Cht & Arg Bx»	Black. Very dinse, hard, silica flooded interval with very fine grained semi massive pyrite up to 71.0 m Qtz veinlets cut the interval regularly, and good matrix suupported breccia textures plainly visible Mod Foliated	85	Intense silicification with thin sericitic seams beginning at 73.0 m. Moderate mineralization over first 1.3 m.	{69.7-71.0} «25% py, 3% Cp, sil fldg.» Thin seams of pyrite decreasing downhole assoc. with qtz veinlets.	One SMSX seam.
76.30 TO 86.90	«Ser Cht & Arg Bx»	Yellow to grey. Intensely sericitized interval in places becoming sericite-qtz rock. A couple of particularly heavy silica flooded intervals contain semi-massive pyrite and base metal mineralization. Foliation	80 90	Sericitized pale yellow with variable silicification and mineralization from 80.3-82.7 a strong "sert" has furry mutlike patches.	{77.3-77.8} «SMSX: 15% py, 3% cp, 2% gn» {78.5-79.3} «SMSX: 15% py, 2% gn, cp, sp» Sulphides are medium to coarse coalescing disseminations within qtz flooded seams.	Two SMSX seams {85.7-86.9} «Flt gou. 30% rec.»

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG301 DATE: 8-November-1989

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
86.90 TO 99.40	«Sil Cht & Arg»	Black & white. fine. Fault bounded interval cut by numerous white qtz veinlets up to 20 cm wide, hazy bordered containing only minor pyrite. Portions resemble "chert marker" but clearly are silicified cherty argillite.		Silicification associated with veining Minor sericite locally developed.	1-2% py as diss. and fracture fillings. Increases slightly tp 3-4% py from 96.3 to end of interval.	Poor recovery (20%) with broken and ground up core. from 97.5-100 m. {97.5-99.4} «Flt ? 20% rec.»
99.40 TO 113.40	«Dol Seds & Sil, Py»	Grey to brown. Fine. Intensely carb'd, but with a siliceous overprint from 99.4-113.4. Typical wispy brown sericite and dark grey fe-dolomite patches with relict contorted seds textures. From 108.0-113.4 cut by many low angle white qtz veinles with assoc. pyrite and base metal dissem. mineralization.		Fe-dolomitized with late silicification from 99.4-113.4	From {108.0-109.0} «10% py, 3% gn, 1% sp, cp» assoc. with late qtz veining (in walls) Disseminated pyrite (+- gn, cp, sp) abo ut 7% from 108.0 to 113.4 overall.	Overprinting silica-Py alteration on Fe-dolomite (propyllitic) alteration.
113.40 TO 127.30	«Dol Seds»	Grey to Brown. Fine. Typical carbonatized sediments, with brown micaceous wisps and grey dolomitic patches. Irregular fabric with a poorly developed foliation	60 90	Pervasive fe-dol and sericite.	1-2% py.	
127.30 TO 130.70	«Sil Cht & Arg»	Black & White. Fine. Contorted black graphitic argillite and chert cut by white qtz. stockwork.		Silicification assoc. with stockwork.	2-3% f.f. py.	
130.70 TO 135.30	«Dol Seds»	Grey Brown Contorted black graphitic argillite and chert by white qtz. stockwork				
135.30 TO 137.20	«Sil Cht & Arg»	Black & White Contorted black graphitic argillite and chert cut by white qtz. stockwork. Foliated	70			
137.20 TO 142.50	«Dol Seds»	Grey & Brown As above with thin argillaceous remnants.				
142.50 TO 146.30	«Arg & Cht»	Black & Grey. Fine. Weakly silicified with thin qtz veinlets. Argillite is graphitic and fissile; chert is contorted to brecciated. Foliated 50-90	50 90	Weak silica assoc. veinlets.	1% py.	{145.1-145.6} «Fli gou. @ 50 degrees»

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
146.30 TO 152.40	«Dol Seds»	Grey & Brown. Fine. Typical, becoming silicified in patches towards bottom.				
152.40 TO 155.10	«Qtz vein»	White. Coarse. Milky white bully qtz vein with minor wallrock blocks now silicified, and distinctive white "earthy" material in one stringer. Contacts irreg at 25 degrees to c.a.	25	Minor talc and silicification with one 30 cm "horse" of py dol seds from 154.2-154.5 Traces of fuchsite.	Vein is barren.	
155.10 TO 166.40	«Py Dol Seds»	Brown. Pyritic dolomitized sediments, containing seams of fine grained "mutlike" pyrite and brown sericite. Cut by widely spaced qtz-dol veinlets roughly parallel to foliation 70-90	70 90	Fe-dolomitized, pyritized, with brown to pale brown sericite portions.	Overall about 10% pyrite with local concentrations up to 25% over 10 cm. {155.1-166.4} «10% Py»	Almost a Mut! {161.8-161.9} «Flt gou.»
166.40 TO 197.60	«Dol Seds»	Typically strongly carbonatized seds. Contorted.		Fe dolomite & brown predominantly	{197.6-198.1} «25% py, 5% cp, 3% gn, 1% sp»	{170.0-170.7} «Flt bx & gou.» {179.5-179.8} «Flt gou.»
197.60 TO 198.10	«Dol Vn.	Grey & metallic. Diffusely bordered dol (+-Qtz) vein at 35 degrees to c.a. with strong dissem. sulfide mineralization	35	Fe-dol gangue predominantly	{197.6-198.1} «25% py, 5% cp, 3% gn, 1% sp»	SMSI in a vein.
198.10 TO 219.10	«Dol Seds»	Brown & grey. Strongly carbonatized contorted sediments that become weakly silicified around 203.0 m and invreasingly pyritic from 207.9-215.4		Fe-dolomitized with brown sericite. From 207.9-215.4 the unit is pyritized assoc. with dol-qtz flooding.	2-3% py except from {207.9-215.4} «10-15% pyrite» with rare dissem. specks of galena and chalco.	{215.2-215.4} «Flt» {218.3-218.6} «Flt bx.»
219.10 TO 233.50	«Cht & Arg Bx»	Black & grey. Weakly silicified and highly contorted cut by numerous qtz (+-dol) veinlets, some of which are mineralized from 222.8-224.3. Clasts are very stretched out and contorted.		Silicification assoc. with widely spaced qtz veinlets.	1-2% except for a few 3 cm mineralized veinlets for 227.8-223.7 and a 20 cm sulphide-qtz vein at 45 degrees from {223.6-223.8} «QV: 20% py, 10% cp, 5% gn.»	{222.4-222.5} «Flt bx.» Interval ends in quite barren sed. breccia.

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
23602	55.00	56.50	1.50	.008	.02	.01	1.6	.02															
23603	56.50	58.00	1.50	.003	.01	.01	1.3	.01															
23604	58.00	59.50	1.50	.011	.05	.02	1.7	.01															
23605	59.50	60.50	1.00	.007	.01	.01	2.0	.02															
23606	60.50	62.00	1.50	.005	.01	.01	1.7	.07															
23607	65.20	66.20	1.00	.050	.22	.11	8.5	.27															
23608	66.20	67.40	1.20	.052	.19	.05	4.6	.21															
23609	67.40	69.70	2.30	.001	.02	.01	1.6	.03															
23610	69.70	71.00	1.30	.022	.02	.10	3.6	.20															
23611	71.00	71.60	0.60	.019	.18	.09	3.5	.18															
23612	71.60	72.40	0.80	.132	.16	.01	37.2	.19															
23613	72.40	73.00	0.60	.002	.01	.01	0.6	.02															
23614	73.00	74.80	1.80	.002	.01	.01	0.3	.03															
23615	74.80	76.30	1.50	.002	.01	.01	0.2	.01															
23616	76.30	77.30	1.00	.063	.29	.12	2.0	.03															
23617	77.30	77.80	0.50	.910	3.04	2.28	178.0	.30															
23618	77.80	78.50	0.70	.167	2.01	1.12	9.4	.07															
23619	78.50	79.30	0.80	.405	2.28	1.69	62.0	.15															
23620	79.30	80.30	1.00	.006	.02	.03	1.4	.04															
23622	96.30	97.50	1.20	.007	.01	.02	0.6	.02															
23624	107.00	108.00	1.00	.007	.07	.09	2.3	.06															
23625	108.00	109.00	1.00	.010	.48	.34	6.1	.18															
23651	109.00	110.50	1.50	.013	.45	.30	4.3	.19															
23652	110.50	112.00	1.50	.015	.09	.10	2.4	.22															
23653	112.00	113.40	1.40	.009	.03	.10	2.3	.19															
23656	154.20	155.10	0.90	.008	.02	.11	1.8	.25															
23657	155.10	155.80	0.70	.006	.08	.09	1.5	.18															
23658	155.80	157.30	1.50	.018	.03	.02	0.5	.02															
23659	157.30	158.80	1.50	.004	.04	.02	0.7	.24															
23660	158.80	160.30	1.50	.010	.29	.03	1.2	.26															
23661	160.30	161.80	1.50	.010	.01	.01	0.6	.05															
23662	161.80	163.30	1.50	.011	.01	.02	0.8	.10															
23663	163.30	164.80	1.50	.011	.02	.02	0.7	.15															
23669	179.20	179.80	0.60	.061	5.30	2.51	18.3	.19															
23666	196.60	197.60	1.00	.009	.02	.02	0.9	.02															
23667	197.60	198.10	0.50	.610	3.09	3.17	3.04	.26															
23668	198.10	199.10	1.00	.018	.09	.03	1.8	.02															
23670	207.90	209.40	1.50	.013	.02	.09	0.5	.02															
23671	209.40	210.90	1.50	.014	.01	.02	0.3	.03															
23672	210.90	212.40	1.50	.192	.42	.72	5.7	.03															

Sample	From (m)	To (m)	Length (m)	CU %	ZN %	PB %	AG G/T	AU G/T	SB %	AS %	CU PPM	ZN PPM	PB PPM	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB		
23673	212.40	213.90	1.50	.093	.51	.23	2.2	.03																
23674	213.90	215.40	1.50	.178	.84	.57	4.2	.03																
23675	221.80	222.80	1.00	.009	.12	.04	0.3	.02																
23676	222.80	223.70	0.90	.154	1.88	1.38	7.4	.01																
23677	223.70	224.30	0.60	.192	1.19	2.30	10.2	.03																
23678	224.30	225.30	1.00	.002	.01	.02	0.4	.01																

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
23601	52.00	55.00	3.00	52.08	16.76	2.27	2.21	1.51	2.08	10.35	.03	1.18	.085		90	102		98.30	5	66	.7	48	.14				70	1
23621	80.30	82.70	2.40	63.16	15.50	.75	1.80	.56	3.52	5.83	.17	.67	.095		25	78		94.99	5	54	.4	42	.10				87	1
23623	105.20	107.00	1.80	55.35	11.21	5.73	4.34	.56	1.89	7.95	.62	1.07	.085		178	801		93.52	20	60	1.8	395	.22				279	15
23654	127.30	130.70	3.40	62.84	9.72	4.47	3.83	.42	1.63	5.62	.29	.60	.075		42	302		90.80	5	83	.7	154	.18				130	4
23655	130.70	132.70	2.00	33.21	10.86	12.60	8.96	.39	1.22	9.77	.37	1.16	.060		70	114		80.43	10	48	1.2	91	.37				228	7
23664	164.80	166.40	1.60	52.61	8.81	1.99	1.45	.55	1.28	17.27	.11	.78	.080		70	470		99.00	50	47	1.6	288	.15				631	25
23665	190.00	193.00	3.00	31.08	11.04	13.12	8.70	1.62	.67	9.37	.22	.98	.040		76	111		77.85	10	32	1.5	76	.37				231	5
23679	227.40	230.40	3.00	59.51	13.88	1.33	3.45	.52	3.09	6.26	.41	.66	.125		67	188		90.70	5	73	.2	69	.12				138	1

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG302 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: Pit Area

PLOTTING COORDS GRID: Mine
NORTH: 519.00N
EAST: 9894.00W
ELEV: 1328.55

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 53.60m
START DEPTH: 0.00m
FINAL DEPTH: 53.60m

COLLAR GRID AZIMUTH: 360° 0' 0"
COLLAR ASTRONOMIC AZIMUTH: 45° 0' 0"

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: October 3, 1989

COLLAR SURVEY: YES
MULTISECT SURVEY: NO
RQD LOG: NO

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

CONTRACTOR: Atlas
CASING: Pulled
CORE STORAGE: Sarex

PURPOSE: Down Dip Structure Testing In Pit.

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	-	-51° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 7.90	Casing					
7.90 TO 53.60	«Mut»	Grey F.G. Moderately pyritic and siliceous muddy tuff. Homogenous, and competant. Foliation Absence of graphitic sections {45.6-45.7} «Flt Gouge»	15	«10-25% Grey Ser» Podiform dolomite common. 5% Qtz-Carb veinlets 11 to foliation.	Pyritic intervals	Probably transposed bedding. Small Arg. clasts (<1cm). 29.2-29.7 Broken 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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
	0.00	0.00	0.00																				

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG303 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: Pit

PLOTTING COORDS GRID: Mine
NORTH: 496.00N
EAST: 9843.00W
ELEV: 1338.10

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

COLLAR DIP: -90° 0' 0"
LENGTH OF THE HOLE: 78.00m
START DEPTH: 0.00m
FINAL DEPTH: 78.00m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: October 7, 1989

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

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

CONTRACTOR: Atlas
CASING: Pulled
CORE STORAGE: Sanex Camp

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
27.70	-	-87° 0'	ACID	OK		-	-	-	-	-	
69.50	-	-86° 0'	ACID	OK		-	-	-	-	-	
78.00	-	-86° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 5.50	«Csg»					
5.50 TO 11.00	«Rubble»	Entirely comprised of Mut				
11.00 TO 41.10	«Mut»	Grey. Fine. Weak silver sericite and pyrite alteration of contorted sediments. Intensifies below 29.8 m where interval becomes a chert fragment breccia (well rounded) with a consistent fabric (foliaiton)	63	Silver sericitization (with trace yellow sericite at 23.1 m). Intensifies downhole. Silicification is notably absent.	5-15% pyrite as a fine 'muddy' dissemination. Chert breccia contains more pyrite than upper portions.	{19.6-27.5} «Flt bx along c.a.»
41.10 TO 78.00	«Weak Sil/ Ser Arg & Cht»	Black & Grey. Fine. First 0.4 m are sheared up and sericitic. Followed by black contorted and brecciated argillite and subordinate chert from 50.7-75.0 the sediments are silicified, with qtz flooding, related to a q.v. from 67.8-70.7. Below the vein is a fault and then weakly sericitic argillite (+-cht) From 76.4 to E.O.H. the contorted laminations run along core axis.	50 70 0	Patchy yellow sericite (minor) except from {65.8-67.8} «Sericitic» which is an intense 'sert'.	From {67.8-70.7} «Q.V. 7% py» as stringers and blebs replacing wallrock fragments within the vein. Overall only 1-3% diss. Py. Note: only 60% recovery of vein.	{41.4-41.5} «Shear» {70.9-71.5} «Flt Gou.»

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
23754	67.80	70.70	2.90	.001	.01	.01	0.2	.01															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
23751	35.30	38.30	3.00	49.11	15.12	5.54	4.79	1.22	1.96	8.26	.08	.89	.150		54	80		89.75	5	214	1.1	47	.22				56	4
23752	50.60	53.60	3.00	69.59	10.05	1.25	2.75	.32	2.32	5.06	.23	.42	.080		33	75		92.33	5	79	.4	47	.11				45	1
23753	65.80	67.80	2.00	68.33	13.47	.19	1.82	.37	3.31	4.91	.20	.54	.175		31	63		93.88	10	127	.2	32	.08				66	1
23755	72.20	75.20	3.00	54.95	13.01	3.33	5.08	.34	2.78	6.95	.44	1.00	.180		60	72		88.94	15	100	.5	58	.20				86	4

MIKKOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG304 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: Pit

PLOTTING COORDS GRID: Mine
NORTH: 496.00N
EAST: 9893.00W
ELEV: 1338.10

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 73.10m
START DEPTH: 0.00m
FINAL DEPTH: 73.10m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: October 7, 1989

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

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

CONTRACTOR: Atlas
CASING: Pulled
CORE STORAGE: Samex Camp

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
14.00	-	-51° 0'	ACID	OK		-	-	-	-	-	
73.20	-	-51° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 9.10	«Csg.»					
9.10 TO 11.40	«Rubble»	Entirely comprised of "Mut".				
11.40 TO 44.40	«Mut»	Gret. Very Fine. Dense, complete silver sericite alteration with 5-10% very fine dissem. pyrite. Paper thin argill. and chert clasts stretched out. Minor shearing perpendicular to c.a. at end of interval	70	"Mutization" silver sericite plus pyrite.	5-10% pyrite as fine dissem.	
44.40 TO 63.50	«Arg & Cht»	Black. Fine. Strongly foliated argillite and lesser chert, cut by widely spaced qtz veinlets.	80	Minor sericite and sil assoc. with veinlets. Some graphitic argillite.	1-2% diss py.	Bottom contact approximate due to badly broken core.
63.50 TO 73.10	«Qtz Vein»	White. Coarse. Very broken and milled-up vein, with sericitic wallrock fragments now pyritized. Quartz is white and bully.		Sericite and pyrite replacing inclusions.	8% pyrite in fractures, dissem. and replacing wallrock inclusions.	Hole ends in qtz vein! About 50% 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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
23758	63.50	67.00	3.50	.007	.01	.01	0.2	.04															
23759	67.00	70.10	3.10	.001	.01	.01	0.2	.02															
23760	70.10	73.10	3.00	.001	.02	.01	0.2	.02															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
23756	38.40	41.40	3.00	57.49	17.28	1.31	2.10	1.18	2.42	9.09	.03	1.18	.190		83	107		98.29	5	138	.7	39	.13				52	1
23757	50.60	53.60	3.00	58.90	12.51	2.40	3.46	.34	3.07	7.07	.42	.65	.175		77	57		90.27	10	99	.4	61	.15				118	6

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG305 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 104.80 mW

PLOTTING COORDS GRID: Mine
NORTH: 641.00N
EAST: 10478.00W
ELEV: 1154.04

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 190.50m
START DEPTH: 0.00m
FINAL DEPTH: 190.50m

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

DATE STARTED: 0, 0
DATE COMPLETED: October 2, 1989
DATE LOGGED: October 3, 1989

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

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

CONTRACTOR: Atlas
CASING: Pulled most
CORE STORAGE: Sarex Carp

PURPOSE: 50 m step forward grid south from RG 299.

DIRECTIONAL DATA: UTM: 2815.408E/70638.495N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
51.50	-	-50° 0'	ACID	OK		-	-	-	-	-	
89.00	-	-50° 0'	ACID	OK		-	-	-	-	-	
129.80	-	-49° 0'	ACID	OK		-	-	-	-	-	
165.20	-	-48° 0'	ACID	OK		-	-	-	-	-	
185.90	118° 5'	-49° 0'	TRO-PARI	OK	Tropari	-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 39.60	«Csg.»	Casing through overburden.				
39.60 TO 81.10	«Sil Cht & Arg & STWK»	White, Grey, Black, Yellow. Very silicified sediments cut by numerous qtz vein lets 10-30 cm thick. Portions resembles 'marker chert', while others are clearly contorted chert-argill. Weakly foliated with abundant imbrications and laminated chert running along c.a. suggesting proximity to a fold nose.	60	Silicified, assoc. with qtz veinlets. Short intervals also partially sericitized to pale yellow. {48.5-51.5} «Ser.» {74.7-81.1} «Ser»	Only 1-2% dissem. and fracture filling pyrite.	{44.3-45.1} «Flt gou.» {50.2-51.4} «Flt gou.» {66.6-67.2} «Flt gou. & bx» {68.8-69.8} «Flt gou. & bx» {80.1-81.1} «Flt. gou.»
81.10 TO 86.50	«Black Sil. Cht & Arg»	Fault bounded interval of block silicified argillite and chert, with some internal matrix sup ported breccia (subordinate) . Mod Foliated	70	Pervasively silicified with numerous 1 cm to 3 cm white qtz bands parallel to foliation. Distinctive absence of sericite.	2-3% py as f.f. and coarse dissem. euhedra.	{86.5-86.6} «Flt gou.»
86.50 TO 91.00	«Qtz Stwk & Ser Seds»	White. Also fault bounded interval comprised of 40% milky white, barren qtz and 60% pale greenish grey sericitic sediments. Strong Foliated. Stockwork veinlets at all orientations	75	Intense sericitization, with only are small patch of black silicified argillite. Minor dolomite (bladed) in the qtz veins.	1-2% diss. Py.	{90.4-91.0} «Flt Gou.»
91.00 TO 100.90	«Black Sil Cht & Arg»	Black. Aphan. Intensely contorted stretched, and pervasively silicified laminated sediments, cut in thin widely spaced qtz veinlets. Strong healed fol.	70	Pervasive & fracture controlled silicification. Also a short interval between faults is sericitic and pyritized. {96.5-97.1} «10% py, ser.»	1-2% py with the exception. 96.5-97.1 having 10% fine epigenetic pyrite wisps and patches resembling incomplete "Mut".	{92.5-93.0} «Flt Gou.» low angle? {96.2-96.5} «Flt Gou.» {97.2-97.4} «Flt Gou.»
100.90 TO 127.70	«Dol Seds»	Grey & Brown. Fine. Sharp, but interlayered contact with typical carbonatized sericitic sediments. Irregular fabric.		Intense, pervasive Fe-dolomite and wispy brown sericite. Cut by widely spaced dol (+-qtz) veinlets.	1-3% diss. py	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
127.70 TO 133.80	«Py Dol Seds»	Brown & grey. The dolomitized sediments are now cut by late qtz (+- dol) veinlets containing coarse disse,. pyrite and impregnating walls with fine grained pyrite.		Pervasive dol and patchy silicification and pyritization. Becoming more silicified downhole.	10-15% pyrite overall with both coarse euhedra in silica, and fine grained "mut" like patches in altered seds. Only one speck of galena at 133.3 assoc. with py and qtz.	
133.80 TO 134.80	«Fuch Seds»	Green. Fine. Distinctive bright green fuchsite-qtz-py interval. Fairly competant die to silica. Poor Foliation	70	Strong silicification and fuchsite.	7% diss. py	
134.80 TO 140.80	«Sil Py Ser Seds»	Yellow to Brown. Fine. Essentially a sericite-qtz-pyrite schist interval of intensely altered sediments. Silica is patchy and in seams.		Yellow to brown sericitic seds, qtz flooding and pyritized in wisps and patches.	15% fine pyrite in wisps and "leopard spots" mimicking contorted seds laminations.	
140.80 TO 146.70	«Sil Cht»	Black & Grey. Fine. Distinctive, competant, laminated chert, probably silicified chert and argillite. Argillaceous partings	70 80	Cut by white hazt qtz veinlets widely spaced.	1-3% f.f.pyrite.	{142.8-143.0} «Flt gou.» {143.0-146.7} «Flt gou.» "Silica healed"
146.70 TO 164.60	«Cht & Arg»	variably contorted and brecciated, cut by qtz-dol veinlets and weakly sericitized in patches. Variable Foliation	65 85	Patchy sericite and dolomite alt. of selected intervals, assoc. with veinlets. Possibly some thin alt "Mpyro" beds	tr. pg	{163.8-164.6} «Flt Gou.»
164.60 TO 190.50	«Maf Lap Tuff»	Green. Fine to Coarse. Interlayered, broken contact. Ghosted lapilli visible in dolomitized mafics. Cut by dol-qtz veinlets up to 30 cm Foliated.	80 90	Dolomitized, asso. with dol-qtz veinlets Black chlorite from 173-175.8	tr. pg except assoc. with 30 cm dol vein with 1% galena and 3% py with distinctive black chlorite in walls.	{174.3-175.8} «1$ gn, dol vns., blk chlor.» {187.5-190.5} «Calcareous lap tuff» {174.2-174.4} «Flt»

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
23684	96.50	97.10	0.60	.005	.02	.01	0.4	.05															
23687	129.30	130.80	1.50	.014	.01	.02	0.6	.04															
23688	130.80	132.30	1.50	.008	.01	.01	0.3	.16															
23689	132.30	133.80	1.50	.004	.01	.04	1.7	.09															
23690	133.80	134.80	1.00	.023	.12	.02	1.4	.12															
23691	134.80	135.80	1.00	.004	.02	.03	0.3	.07															
23692	135.80	137.30	1.50	.008	.01	.02	0.3	.06															
23694	138.80	139.80	1.00	.019	.01	.01	1.8	.21															
23695	139.80	140.80	1.00	.044	.02	.02	1.9	.19															
23696	140.80	141.80	1.00	.001	.01	.01	0.2	.03															
23699	174.30	175.80	1.50	.110	.93	.72	4.3	.04															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
23680	48.10	50.10	2.00	66.50	14.02	.45	2.08	.36	3.71	5.44	.16	.60	.095		24	75		95.14	5	98	.2	40	.09				82	1
23681	81.10	84.10	3.00	58.94	10.83	5.02	3.25	.25	2.77	6.92	.27	.89	.245		10	159		95.07	5	157	.9	73	.19				81	5
23682	87.00	90.00	3.00	62.81	14.90	.96	1.57	.37	3.87	6.44	.17	.69	.365		46	73		96.96	5	215	.3	39	.10				90	1
23683	93.50	95.50	2.00	80.24	7.88	.31	.44	.27	1.81	3.96	.01	.45	.200		29	41		98.97	5	149	.4	28	.05				81	1
23685	107.00	110.00	3.00	40.25	14.11	6.04	6.81	1.09	2.27	10.56	.22	1.46	.440		114	78		84.68	20	264	1.1	62	.29				143	7
23686	127.70	129.30	1.60	43.68	6.83	6.35	3.98	.54	1.18	17.41	.28	.83	.185		98	56		95.72	70	71	1.4	114	.26				446	11
23693	137.30	138.80	1.50	51.96	15.42	.22	.30	.63	3.59	12.84	.01	1.41	.435		179	184		98.70	45	52	1.1	70	.10				729	6
23697	151.00	154.00	3.00	61.45	15.10	.87	2.07	.27	4.14	6.42	.47	.74	.180		50	54		92.35	10	162	.1	53	.10				70	1
23698	172.30	174.30	2.00	45.88	12.87	3.01	13.40	.17	.19	11.48	.32	1.06	.020		144	1420		90.48	5	22	1.4	1252	.30				59	1
23700	187.50	190.50	3.00	36.47	11.39	12.46	7.89	1.87	1.13	8.97	.18	1.37	.065		63	83		82.60	15	59	1.5	58	.37				136	6

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG306 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 106+15 mW

PLOTTING COORDS GRID: Mine
NORTH: 661.00N
EAST: 10605.00W
ELEV: 1117.84

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

COLLAR DIP: -50° 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: 0, 0
DATE COMPLETED: October 2, 1989
DATE LOGGED: October 4, 1989

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

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

CONTRACTOR: Atlas
CASING: L.I.H.
CORE STORAGE: Sarex Camp

PURPOSE: 50 m grid south, in front of RG 277

DIRECTIONAL DATA: UTM: 2729.963E/70729.49N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
56.70	-	47° 0'	ACID	OK		-	-	-	-	-	
112.20	-	48° 0'	ACID	OK		-	-	-	-	-	
133.50	-	48° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 29.20	«Csg»	Overburden				
29.20 TO 34.20	«Ser Sil Seds»	Yellow Grey. Fine. Intensely silica flooded sericitic sediments, with faint relict contorted laminated textures. Irregular fabric.		Silicification and sericitization intense and complete. Over last w m pyritization increases to 7%.	About 5% pyrite overall increasing downhole, in "Mutlike" brown patches and wisps.	From 29.2-32.3 only 50% rec.
34.20 TO 35.50	«MSSX» Massive Sulfides	Metallic yellow and grey. med. Irregular silica flooded contacts roughly perpendiculat to c.a. Weakly cataclysed, medium grained massive sulphides (90%) in a crystalline qtz matrix.	90	Silica-Sulfide rock.	40% pyrite 20% chalcopyrite 15% galena 10% sphalerite 5% tetra? Weakly milled-up abd broken. Suggestion of zoning (vein?) with pg on margins, then cp, with gn rich core.	100% recovery with long competant core run.
35.50 TO 38.40	«Sil Ser Seds»	Grey. Fine. Intensely silicified sediments with sericitic partings and fracture filling pyrite. Fabric is swirling. Also minor brown "Mutlike" patches	60 90	Silicification and sercitization.	5-7% pg in str's and fine grained patches with sericite.	{35.5-38.4} «50% recovery» due to sericitic partings?
38.40 TO 38.70	«MSSX»	Metallic yellow & grey. Med. As before, a second seam of massive, milled sulfides in a qtz gangue. Sharp contacts	80	Silica - sulfide rock (vein?)	«35% py, 20% cp, 10% gn, 10% sp» {38.4-38.7}	good recovery
38.70 TO 40.20	«Sil Ser Arg & Cht»	Grey, Black & white. Fine. Strongly altered seds with fracture filling py and numerous qtz veinlets.		Silica-sericite incomplete, with patches argillaceous cherts remaining.	5% pyrite and trace gn and cp assoc. with thin qtz veinlets.	Apparently good recovery.
40.20 TO 41.40	«Mislatch»	A few ground up pieces of sericite and qtz is all that was recovered due to driller's error.		Ser-Silica	pyrite only as disseminations.	{40.2-41.4} «5% rec.»
41.40 TO 49.10	«Sil Black Cht & Arg»	Distinctive black. Fine. Very black, hard interval of silicified laminated, contorted sediments, cut by numerous qtz veinlets at all orientations. Foliation	80 90	Silica flooding assoc. with stockwork veinlets.	1-2% f.f. pg	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
49.10 TO 88.00	«Ser Cht & Arg»	Grey to yellow. Fine. A very messy interval of patchy alteration & fault breccia. Moderate to strongly foliated cherty argillite.	75 90	Sericitization and lesser silica patchy and incomplete assoc. with barren qtz veinlets and/or faults. One short dolomitized interval.	{79.9-81.6} «Flt bx» {66.1-67.1} «dol alt.» tr. pg only	{67.5-68.9} «flt gou.» {71.3-71.7} «qtz dol vein at 55 degrees» {74.0-74.6} «flt bx»
88.00 TO 114.60	«Sil Cht & Arg»	Grey. Fine. Distinctive silicified "Marker cherts", very competant with graphitic partings. Cut by stockwork qtz veinlets. Irregular fabric, highly contorted.		Silicification, pervasive but assoc. with white qtz stockwork.	1% pyrite.	{88.0-114.6} «qtz. stwk.»
114.60 TO 133.50	«Cht & Arg»	Black & grey to yellow. fine. Another messy interval of faults, patchy alteration assoc. with qtz flooding, and one short dolomitized interval from {129.2-129.6} «dol» Fabric is very irregular		{114.6-133.5} «variably sil & ser» Some local breccia textures. Core is badly broken.	tr pg.	{116.2-116.5} «Flt gou.» {127.1-128.9} «Flt bx» poor 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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
23727	32.40	33.00	0.60	.003	.01	.02	0.2	.02															
23728	33.00	34.20	1.20	.073	.05	.04	0.4	.07															
23729	34.20	35.50	1.30	1.370	3.62	23.60	249.0	.43															
23730	35.50	37.00	1.50	.019	.10	.32	3.9	.04															
23731	37.00	38.40	1.40	.055	.88	.43	11.7	.05															
23732	38.40	38.70	0.30	1.820	3.61	15.10	98.0	.21															
23733	38.70	40.20	1.50	.012	.05	.12	3.6	.03															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
23726	29.20	32.40	3.20	63.35	14.68	.59	1.93	.42	3.84	6.42	.27	.64	.100		14	60		95.55	5	52	.1	57	.10				119	1
23734	44.40	47.40	3.00	60.31	12.54	.94	4.03	.43	3.14	6.77	.45	.77	.110		54	54		91.30	5	55	.1	69	.14				70	6
23735	50.50	53.50	3.00	58.76	15.63	.17	3.39	.52	4.06	6.42	.41	.73	.145		52	52		92.11	5	79	.2	69	.12				154	3
23736	81.60	84.60	3.00	66.50	12.55	.35	2.31	.51	3.14	5.98	.36	.53	.150		33	104		93.50	5	88	.1	46	.10				66	1
23737	108.50	111.50	3.00	86.50	4.82	.17	.38	.12	1.13	3.04	.01	.22	.140		42	1007		98.90	25	370	.7	155	.04				149	1
23738	120.70	123.70	3.00	61.74	10.44	5.36	3.17	.22	2.43	5.88	.38	.59	.180		49	87		91.73	5	424	.8	98	.19				77	3

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: RG307 IMPERIAL UNITS: METRIC UNITS: X

PROJECT NAME: SAM
PROJECT NUMBER: 240
CLAIM NUMBER:
LOCATION: 108+00 mW

PLOTTING COORDS GRID: Mine
NORTH: 642.00N
EAST: 10784.00W
ELEV: 1068.53

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

COLLAR DIP: -50° 0' 0"
LENGTH OF THE HOLE: 79.20m
START DEPTH: 0.00m
FINAL DEPTH: 79.20m

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

DATE STARTED: 0, 0
DATE COMPLETED: 0, 0
DATE LOGGED: October 6, 1989

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

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

CONTRACTOR: Atlas
CASING: L.I.H.
CORE STORAGE: Sawyer Camp

PURPOSE: Collared 50m west of RG 274 on 108+00 W section

DIRECTIONAL DATA: UTM: 2581.166E/70836.008N

Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments	Depth (m)	Astronomic Azimuth	Dip degrees	Type of Test	FLAG	Comments
29.60	-	-50° 0'	ACID	OK		-	-	-	-	-	
79.20	-	-50° 0'	ACID	OK		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	
-	-	-	-	-		-	-	-	-	-	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 21.90	«Csg»	No recovery				
21.90 TO 31.00	«Dol Seds»	Grey & brown. Fine. Typical grey dolomitized sediments, with brown sericitic micaceous wispy partings. Numerous flt. gouges and a few dol veinlets.		Pervasive dolomitization, sericitization.	{29.7-30.2} «15% pg, 5% cp, 3% gn» assoc. with dol flooding. {30.2-30.6} «dol vein at 30 degrees» Overall only 2% py.	{24.6-24.7} «Flt gou» {25.7-26.4} «Flt gou. & Bx» {27.3-29.0} «Flt gou. & bx»
31.00 TO 38.20	«Arg & Cht»	Black & grey. Fine. Fault bounded interval of black argillite and lesser chert, contorted and foliated, with weak and patchy dolomitization.	65	Patchy dolomitization assoc. with thin dol qtz veinlets widely spaced.	1-2% pg	{31.0-31.7} «Flt bx» {34.4-34.6} «Flt gou» {37.8-38.2} «flt go & bx»
38.20 TO 70.30	«Sil Black Cht & Arg»	Black. Fine. Contorted laminated cherty argillite texture, now very hard and siliceous. Some graphite development. Fabric poorly developed with no measureable foliation.		Silicification, assoc. with widely spaced white qtz veinlets flooding and veinlets, slightly elevated in presence of fuchsite.	Only 75% recovery overall. {68.0-70.3} «Flt gou & bx»	
70.30 TO 79.20	«Dol Seds»	Grey. Fine. Typical pervasive dolomitization of sediments, with brown sericite.		Dolomite & sericite with minor pyritization from 70.3-72.6m	1-2% pg except {70.3-72.6} «5% pg» in brown "mutlike" patches.	{74.3-75.5} «flt gou & bx»

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	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS
23740	29.00	29.70	0.70	.030	.42	.27	4.3	.02															
23741	29.70	30.20	0.50	.915	5.50	5.42	4.42	.05															
23742	30.20	31.00	0.80	.027	.09	.07	2.0	.02															
23743	31.00	32.00	1.00	.008	.04	.08	1.9	.01															
23746	50.30	51.80	1.50	.010	.01	.02	1.5	.01															
23747	61.00	62.50	1.50	.002	.01	.01	1.0	.02															

Sample	From (m)	To (m)	Length (m)	SiO2 %	Al2O3 %	CaO %	MgO %	Na2O %	K2O %	Fe2O3 %	MnO2 %	TiO2 %	Ba %	Zr %	Cu ppm	Zn ppm	Pb %	Total %	Au ppb	Ba ppm	Ag ppm	Pb ppm	P2O5 %	Sr %	S %	Total %	As ppm	Sb ppm
23739	26.00	29.00	3.00	35.51	12.03	9.76	8.25	1.16	1.25	9.62	.38	1.13	.105		544	898		80.82	15	103	1.9	554	.33				214	12
23744	33.00	35.00	2.00	50.93	12.73	2.85	5.30	.66	2.10	10.33	.38	1.12	.165		55	109		87.83	10	177	.5	75	.15				154	4
23745	38.40	41.40	3.00	71.53	3.06	10.58	1.12	.12	.58	4.02	.06	.27	.055		103	218		94.70	10	202	1.3	60	.22				126	6
23748	70.30	72.60	2.30	51.95	11.49	6.03	4.68	.60	1.97	9.65	.46	1.33	.100		40	373		93.76	5	70	.8	234	.25				326	10
23749	75.40	78.10	2.70	33.70	12.62	16.43	9.20	.72	2.37	8.47	.35	1.52	.100		108	68		86.45	5	66	1.3	81	.44				186	12