

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: C90-1

DATE: 3-October-1990

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 36.50	.CASING/	No recovery.				
36.50 TO 48.20	.MAF/ARG TECT BX/	Black and light green. Fine grained. Strong, wavy fabric from 40-90 degrees to core axis, most commonly: The interval is competent, mixed argillite and pale green dolomitic volcanoclastics on a laminated to thinly bedded scale. Chaotic contorted intervals range to tectonic bx.	50	Fe-dol is pervasive within green beds within green beds with minor crosscutting veinlets. Minor yellow sericitic siltstone at 41.5 only. A couple of barren 10cm qtz veins also present.	12 disse. py.	
48.20 TO 54.10	.ARG FAULT BX/	Black with lesser pale green and grey. Gradationally the above unit becomes a friable argillaceous fault breccia. Still contains subordinate amount of pale green volcanoclastics. Probably protolith was a "transitional fragmental".		Weak Fe-dol and only minor graphite.	Tr py.	Middle fault?
54.10 TO 188.80	.DOL MAFICS/	Brown. Gradational contact with monotonous pile of carbonatized mafics. Very bleached but relict lapilli textures locally. Also relict hypabyssal (?) igneous textures, and fuchsite pseudomorphed porphyry. Typical Rea Mafics. Weakly foliated	50	Intense ferrodolomitization with accompanying brown sericite (after chlorite) Numerous broken dol. veinlets. Minor fault gouge and breccia zones: 65.8-66.7, 142.4-142.6, 164.4-165.5.	Only trace diss. py.	
188.80 TO 208.70	.ARG BX/DOL MAF/	Black and brown. Knife sharp, but irregular and brecciated contact with black, dense graphitic argillite breccia, locally friable. Interdigitized with dol mafics on a 3-5m scale. Minor fault bx & gouge throughout. FOLIATION	55	Strong dol and brown sericitic mafics (lap tuff?), argillite is locally a hydrobreccia with fe-dol fracture fillings.	Only 1% py in mafics, but up to 5% py in argillite. As thin laminations and fracture fillings except: 9192.0-192.8L .10% py/	Detailed log: 188.8-192.5: argillite bx. 192.5-196.6: dol. mafics. 196.6-198.6: argillite bx. 198.6-200.7: dol. mafics. 200.7-201.4: argillite bx. 201.4-208.7: dol. mafics.
208.70 TO 215.20	.CHT/CHTY ARG/	Grey to black. Aphanitic grained. Thinly laminated ribbon cherts and cherty argillite. Kinked and warped but fairly consistent at Cut by numerous irregular, white barren qtz veins to 20cm.	65	Silicification associated with qtz veining.	2-3% py as fracture fillings.	Core is locally badly broken.
215.20 TO 222.60	.YELLOW SER/ARG/	Yellow, grey, black. Fine grained. Strongly foliated, laminated, yellow sericite schist with lesser argillaceous, pyritic, dolomitic and brown sericitic laminations. From 220.8-221.3: resembles relict heterolithic fragmental, now very stretched out parallel to foliation. Upper contact faulted. 9215.2-215.6L .Flt. Gouge/	80	Intense yellow sericitization and silicification, lesser dol assoc. with late stringers.	Wispy and disse. py 5-10%.	

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222.60 TO 225.60	.CHERT/	Black. Aphanitic grained. Ribbon laminated black chert with carbonaceous partings. Wavy bedding about at Gradational contacts with yellow sericitic unit above and below.	70	Minor sil. "sweats" and flooding.	3-4% fracture filling pyrite.	
225.60 TO 231.30	.YELLOW SER/ARG/	Yellow and black. Mixed interbanded yellow sericite and black argillite, as before on other side of chert. Gradational lower contact with black argillite "hangingwall" seds.		Yellow sericite alteration of ?pyroclastic beds. Shades into pale olive green downhole.	2% wispy py.	Not a fault contact with HW seds. Rather, a gradational contact.
231.30 TO 263.30	.ARG/SILT/ WCKE/	Black. Fine grained. Very dense black argillite, thinly bedded, with lesser silty argillite and wacke beds. Soft sed. structures show tops downhole. Minor fault breccia from 9233.4-233.9l .Flt. Bx/ containing broken white, barren, qtz veinlets. One open fold at 246.2-246.4 followed by weak flt. BEDDING AT	65	None.	None.	Hangingwall seds!
		END OF HOLE.				

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ASSAY SHEET

DATE: 3-October-1990

Sample	From (m)	To (m)	Length (m)	ASSAYS													COMMENTS							
				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	
BCD26806	192.00	192.80	0.80	.004	.01	.01	1.5	.01				39	92	16				11	137		5	1.1	4	
BCD26808	208.70	210.20	1.50	.005	.01	.01	0.5	.01				53	119	21				40	92		6	0.5	7	
BCD26809	210.20	211.70	1.50	.003	.01	.01	0.5	.05				27	28	18				40	59		6	0.5	46	
BCD26810	211.70	212.70	1.00	.003	.01	.01	0.2	.04				33	116	33				45	85		7	0.2	38	
BCD26811	212.70	214.00	1.30	.003	.01	.01	0.1	.01				34	43	18				39	90		5	0.1	3	
BCD26812	214.00	215.20	1.20	.004	.01	.01	0.3	.01				35	48	20				66	128		5	0.3	1	
BCD26813	215.20	216.70	1.50	.005	.01	.01	0.3	.01				46	53	27				57	155		6	0.3	2	
BCD26814	216.70	218.20	1.50	.009	.01	.01	0.2	.01				94	84	43				73	109		8	0.2	6	
BCD26815	218.20	219.70	1.50	.007	.01	.01	0.3	.03				71	64	43				83	112		9	0.3	34	
BCD26816	219.70	221.30	1.60	.010	.01	.01	0.7	.01				96	63	40				108	119		10	0.7	1	
BCD26817	221.30	222.60	1.30	.006	.01	.01	1.1	.06				57	69	41				80	150		9	1.1	56	
BCD26818	222.60	224.10	1.50	.005	.01	.01	1.3	.16				46	60	34				448	105		10	1.3	158	
BCD26819	224.10	225.60	1.50	.002	.01	.01	1.1	.17				19	27	22				570	76		9	1.1	166	
BCD26820	225.60	227.10	1.50	.010	.02	.01	1.7	.08				103	192	44				107	119		10	1.7	81	

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ASSAY SHEET

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GEOCHEM. SHEET

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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
BCD26801	39.00	42.00	3.00	65.07	15.19	0.01	1.60	0.39	3.65	6.93	.36	.70			75	63			5	48	0.8	62	.01		.92	94.89	54	9
BCD26802	57.00	60.00	3.00	34.59	12.29	14.90	4.38	3.33	1.60	8.02	.20	.97			83	64			5	31	1.7	43	.07		.13	80.50	22	8
BCD26803	89.00	92.00	3.00	32.51	12.29	19.99	5.48	1.51	2.10	9.61	.15	.97			81	71			5	26	1.6	18	.03		.52	85.19	1	4
BCD26804	124.00	127.00	3.00	34.22	12.31	17.13	5.23	2.31	1.71	8.10	.15	.93			64	39			5	18	1.3	16	.05		.24	82.39	1	2
BCD26805	185.00	188.00	3.00	28.73	9.88	22.32	5.68	1.10	1.86	7.51	.14	.86			78	226			10	32	1.7	14	.09		.47	78.69	2	6
BCD26807	202.00	205.00	3.00	38.66	11.41	15.25	6.02	0.25	2.81	10.94	.50	.98			120	67			45	61	1.4	25	.10		4.85	91.84	1	13
BCD26821	227.10	230.10	3.00	65.61	15.08	0.01	1.54	0.30	3.57	6.61	.31	.71			56	75			5	57	0.4	51	.01		2.17	96.00	62	3
BCD26822	234.00	237.00	3.00	62.66	13.69	2.78	2.70	0.34	3.02	6.14	.08	.68			43	105			5	71	0.9	30	.01		.69	92.89	9	1

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GEOCHEM. SHEET

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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 82.90	.CASING/					
82.90 TO 93.80	.QTZ SER ARG FLT BX/	Grey, black, yellow. Fine grained. Weathered zone of fault brecciated, pale brownish yellow quartz sericite and argillite. Patches of quartz dolomite flooding stand out as more competent blocks. Compositional layering apparent within blocks of quartz sericite argillite. (75-80deg) Grey clayey fault gouge and breccia highly graphitic.	78	Local moderate pale yellow sericite alteration. Quartz > dolomite (60:40) in veins of silica/carbonate flooding.	5-6% disseminated pyrite in QDV and quartz sericite. Pyrite not evident in fault gouge, probably destroyed.	90.5-95.8: 30% core loss within fault zone.
93.80 TO 99.00	.QTZ SER ARG/	Yellow, black. Fine grained. Lithologically conformable interval to the overlying fault zone. Deformed interval of layered quartz sericite and black argillite. Bullseye fold at 94.2m. Where qtz ser arg shows wavy folding of compositional layering angle to c.a. Cleavage weak to moderately well developed at 45deg. to compositional layering and similarly at angle to c.a. of (45-50deg) Quartz veining parallel/subparallel to layering & phyllitic foliation. Occasional veins show isoclinal folds. Minor intervals of gouge breccia and broken core.	85 47	Moderate to intense pale greenish yellow sericite. Bands vary from <1mm to 2cm. Weak to moderate dolomitization within quartz and light siltite layers.	3-4% py distributed in disseminations and blebby stringers associated with quartz dolomite veins.	
99.00 TO 100.30	.CHT ARG FLT BX/	Black. Black, grey fault gouge and breccia composing graphitic clayey fragments of cherts and argillite. Interval includes 8-9% of white greyish white quartz (minor dolomite) veins, as competent blocks within fault zone.		Graphitic alteration of argillite.	<1% pyrite.	
100.30 TO 120.60	.ARG CHT/	Grey-Black. Interval dominated by laminated to deformed argillite and chert. Chert: Arg ratio approx. 70:30. Sections of chert show bleaching and quartz veining/flooding occupies an estimated 9% by vol. Phyllitic foliation surfaces are parallel to compositional layering. Laminated platy cherts break easily along graphitic argillite laminae at angles to CA of Notable intervals of quartz veining occur at: 107.0-107.2 - white quartz vein concordant with layering, occupying a fault zone. 112.5-112.8 - greenish white quartz vein/flooding with graphitic stylolites.	75 90	Zones of bleaching accompanying the quartz flooding and veining. Weak spots of dolomite occur within some of the cherty intervals. Very minor laminae of greenish-yellow sericite.	Pyrite content increases downhole. 7-15% pyrite is distributed mainly as blebby and stringers. Banding parallel to compositional layering. Stringers, grains and blebs are associated with quartz veining. Base metal sulphides occur at two intervals: 9107.0-107.2L .0.5% Bn/ in quartz vein as blebby stringer. 9115.3-115.4L .1% Cp, 7% Py/	Core generally broken and blocky.

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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE: TO CA:	ALTERATION	MINERALIZATION	REMARKS
		115.7-116.0 - White quartz vein with graphitic stylolites.				
		117.9-118.6 - Quartz veining/flooding with graphitic stylolites. Folding varies from ripples to waves and bulls eye structures exhibiting both long and short limbs. Local stretching and fragmentation occurs to give tectonic texture.				
120.60 TO 122.60	.QTZ VN ARG CHT/	Grey-black. The interval is lithologically the same as the one above, comprising grey, black laminated to deformed argillite and chert. The distinction arises due to the presence of a pyritic Qtz (+ Dol) vein. The vein is definitely cross-cutting the compositional layering and occupies 50% of the interval by volume.		Bleaching and possibly secondary silicification of the cherts.	Distinctive framboidal pyrite; semi-massive concentration associated with Qtz veining and flooding. The colour of the pyrite appears bronze compared to the non-framboidal pyrite. Overall Py content - 30% with 40-50% in the Qtz vein.	
122.60 TO 130.50	.ARG CHT/	Grey Black. This interval is lithologically continuous with the structurally overlying units. Grey to black, laminated to deformed argillite and ribbon chert. Chert: Argillite 70:30. Zones of quartz (minor dol) veining and flooding occupy 10% of the interval. Qtz veins have also caused bleaching of the of the adjacent chert zones. Qtz veins and and flooded zones contain graphitic stylolites. Qtz vein at 123.9 shows internal brecciation. Argillite-chert laminations and cleavage are parallel at: Folding varies from wavy to isoclinal. Broken fragmental core indicating fracture zones occurs at: 122.6-123.5 and 129.3-129.8m. Minor (1-2cm) intervals of graphitic clayey gouge occur intermittently.	75 85	Graphitic alteration of argillite. Possible further silicification of the cherts.	7-10% Py occurs as folded bands (1-2mm) grains and blebs in stringers or individual occurrences within Qtz veins.	
130.50 TO 131.30	.QTZ SER ARG/	Yellow-Green, black. Faulted contact with the above interval. Grey yellowish greenish sericite laminae (1-3mm) interlayered with fine argillite (<1mm) and Qtz (1-5mm), altered chert? Interval is highly deformed, with moderately well developed crenulation cleavage at: Compositional layering at approximately: Sections show stretching and fragmentation.	45 75 80	Mod to intense sericite alteration. Weak dolomitization.	7% Py distributed as grains and blebs in stringers sub-parallel to the layering.	

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131.30 TO 132.80	.CHT SILT ARG WACKE/	Transitional, fault bounded interval dominated by light grey siltite and blacke argillite. 16% of the interval is Qtz Dol veins. Dolomite content has increased markedly compared to veins in the overlying intervals. The interval is faulted near the lower contact.		Siltite shows moderate degree of dolomitization. Graphitic alteration of the argillite.	<1% Pyrite.	
132.80 TO 231.10	.SILT ARG WACKE/	Grey black. Minor fault at contact with above transitional unit. The interval is composed of black weakly graphitic argillite and grey dolomitic siltite and (sandy) wacke. Argillite:siltite/wacke - 55:45 Siltite/Wacke interbeds vary in thickness from 2mm to 20cm with notable thick units at 163.0-163.6m and 214.7-215.4m Argillite intervals vary in thickness from 1-2mm to 30cm with a notable thickness between 172.0-172.8m. The structural relationship of the argillite-siltite/wacke changes at about 178.3m from relatively undeformed interbeds to a stretched, almost tectonic interval 9178.3-188.7L .Arg Wke Tect/ This interval coincides with zones of faulting. A similar section of 'tectonite' occurs between 211.1 and 212.4m also in relationship to faulting. Notable faults and fractures occur at the following intervals: 147.0-147.5m Blocks and gouge. 152.0-152.7m " 158.4-160.0m " 170.5-171.3m " 181.5-182.5m " 187.6-188.6m " 189.0-189.7m " 190.0-203.1m Zone of blocky and broken core. 211.4-212.5m Blocks and gouge. 222.7-223.0m " 223.7-224.0m " 224.2-224.7m " 228.0-228.5m " Angular relationships between bedding/core axis and bedding/cleavage are taken at depth intervals as follows:	Moderate to intense dolomitization of grey siltite and wacke interbeds. Preferential dolomitization due to porous texture. Dolomitization remains constant throughout the interval.	Trace Py associated with occasional Qtz/Dol veins.	The two thick wacke beds may correlate either side of the expected fold hinge zone? The 80cm argillite bed has no correlation on the downhole limb of the expected synclinal structure. Way-up criteria are poorly developed i.e. flame structures and load casts tend to contradict eachother.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		S0/S1 @140.2m	84			
		S0/S1 @148.7m	68			
		S0/S2=45 deg				
		S0/S1 @ 157.3m	62			
		S0/S2=30 deg				
		S0/S1 @ 163.6m	71			
		At 168.2m folding of interbeds is more apparent.				
		S0/S1 @ 181.5m	80			
		S0/S1 @ 196.3m	85			
		S0/S2=60 deg				
		S0/S1 @ 205.5m	75			
		S0/S2=60-70 deg				
		S0/S1 @ 213.1m	75			
		Varies between arg and siltite/wacke.				
		S0/S2 in argillite	42			
		S0/S2 in siltite/wacke	75			
		At 221.3m cleavage/micro faulting displacing siltite at S1/S2 angle=45 deg. (approx).				
		S0/S2=60 deg				
		S0/S1 @225.4m	85			
		S0/S2=65 deg				
		S0/S1 @ 230.0m	75			
231.10 TO 257.00	.QTZ SER/	Grey greenish, yellow white. Faulted and sheared contact with the above unit. The interval is a relatively thick sequence of white to greyish white quartz (including silicified sediments); greyish, greenish yellow sericite, and minor remnant traces of argillite. Argillite content increases visibly within the bottom 2m section from 255.0-257.0m, occupying 20% by volume. Phyllitic to schistose foliation is well developed with angle to CA of: Foliation parallel to sub-parallel to comp layering, however layering is poorly defined due to the intense alteration blending bands together. Grey-white quartz dolomite veins have gradational contacts with the host rock and tend to be concordant with the foliation/comp layering. Qtz-dol veins which stand out against silicified host occupy 4% of the interval. Lower contact adjoins a major fault, with angle to CA of:	70 90 40 50	Silicification is intense, particularly to a depth of 246.5m where sericite becomes more dominant. Overall intense sericite alteration.	7 to 10% Py throughout, with local concentration to 20%. Py is distributed in disseminated grains and blebs within quartz and sericite. Deformed bands and patches of very fine grain size.	

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257.00 TO 264.50	.GRAPH FLT BRX GOUGE/	Major fault zone within what was an argillite siltite wacke. Only 40cm of dolomitized blocky core remains in a 7.5m interval of graphitic fault gouge and breccia. Foliation within remnant block @ 257.4-257.7m at: Low angle to CA of - with some stringers sub-parallel to CA.	30 20	Intense graphitic alteration of argillite. Intense dolomitization in less faulted blocks.	5-7% Py present in remnant blocks, associated with quartz dol veins.	
264.50 TO 268.80	.CHT ARG/	Grey black. Fine. Lithologically gradational with fault zone. Shearing and fragmentation still very evident with intervals of gouge and deformed sediments Minor Qtz-dol veining	70 80	Graphitic alteration of the argillite.	<1% Py	
268.80 TO 276.00	.CHT ARG FLT BRX GGE /	Grey black. Lithologically gradational with the above 'unit'. The interval is intensely faulted. Grey black graphitic chert argillite fault breccia and gouge occupies 95% of the interval. In some sections faulting has rotated layering parallel to CA e.g. 273.0-273.2m.		Graphitic alteration of argillite. Mod to intense dolomitization of remnant blocks along siltite or quartz parallel to argillite layering.	3-4% Py in remnant breccia clasts and blocks of silicified sediment and Qtz dolomite vein.	
276.00 TO 281.40	.DOL SILT ARG/	Grey Black. A mixed interval lithologically gradational with the overlying unit, comprising deformed partially faulted, dolomitized siltites, argillites and Qtz-dol veins. Locally argillite and dol siltites (cherts?) have been deformed to tectonite. Approximately 18% of the interval is fragmented and broken with gouge.		Brown sericite is occasionally well developed. Mod to intense dolomite alt of non argillite lithologies.	Py is locally abundant (to 25% over 1-5 cm) associated with patches of Qtz-dol veining and flooding. It occurs as disseminated grains and blebs in patches, stringers and isolated grains. One single 3mm diameter bleb of sphalerite at 276.1m associated with Qtz-dol vein.	
281.40 TO 294.70	.DOL MAF SEDS/	Grey. Lithologically gradational interval to the above but with faulted contacts. The interval is distinguished by lighter grey pervasive dolomite alteration. The upper part of the interval (approx. 281.4-287.0) contains an argillite component but near the bottom of the interval a more mafic protolith is indicated by brownish sericite, green talc (and chlorite?). Foliation is weakly developed Approx. 8% of the interval is occupied by Qtz-dol veins which have either a hazy/patchy or relatively sharp contact.	80	Intense dolomitization. Locally well developed yellow brown sericite. Minor green talc and chlorite.	2-4% Py distributed in thin (1-3mm) bands and stringers. At lower contact 9294.6-294.7l <0.1% Cp/ in Qtz-dol vein. Pyrite content tends to diminish in dolomitized mafic component.	

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294.70 TO 308.10	.CHT ARG/	Fault contact with above unit. Interval composed of a relatively hard graphitic argillite with microfractures (hydro-brecciated?) filled with Qtz-dol. Also a ribbon banded chert and argillite unit. The interval is folded and faulted and has patchy zones and veins of quartz-dolomite. Overall quite complex. Up to 40% of the interval is broken, fragmented brecciated and contains fault gouge. Distinctive zones and patches of quartz-dolomite occupy 10% of the interval.		Weak to intensely dolomitized sections, bands and veins. Hard black argillite in part silicified.	5-10% Py distributed in fine 1-2mm bands, stringers and isolated grains and blebs. Locally 30% Py associated with QDV. 9304.3-304.5L .<30% Py/	
308.10 TO 310.00	.ARG DOL MAF/	Grey, black, brown. Fine grained. Gradational contact with the intervals above and below. The 'unit' comprises grey dolomitized mafics with 1-3mm wispy laminae of brown sericite. Original mafic texture is completely destroyed. 10-15% argillite is present within the gradational contact zones. 5-6% QDV occur parallel to, or, crosscutting foliation.	75	Moderate to intense dolomitization.	1-2% pyrite as isolated grains & blebs associated with QDV.	
310.00 TO 316.10	.CHT ARG FLT BX/	Grey, black. Fine grained. Faulted, laminated to deformed grey black cherts & graphitic argillites. Numerous quartz (minor dolomite) & quartz dolomite veins invade the host, parallel to and cross-cutting foliation. Approx. 17% of the interval is occupied by QDV which also exhibit brecciation with the chert and argillite.		Numerous dolomitic stringers & intense dolomitization of siltite and chert laminae.	1-3% pyrite overall, up to 5% locally, occurring as isolated grains blebs and granoblastic blebs associated with QDV and QDV fault breccia.	
316.10 TO 324.40	.ARG CHT/	Grey, black. Fine grained. Lithologically similar unit to the above, but with increasing content of grey chert to the lower interval limit. Compositional layering shows folding, micro-fracturing with phyllitic foliation developed at (60-80deg) Faulted and folded QDV occupy 9% of the interval.	70	Graphitic alteration of argillite. Weak dolomitization of cherty intervals	Pyrite content increases downhole from 2-3% to 6-7% with local concentrations to 10% over 1-2cm associated with QDV in cherts.	
324.40 TO 327.90	.DOL MAF/	Grey, greenish brown. Fine grained. Conformable contact to the above unit. Intensely altered grey and greenish brown, dolomitized, sericitized mafic interval. Original textures destroyed. Fault gouge 324.5-324.9m.	80	Intense dolomitization and moderate to well developed patchy to wispy laminae of yellow brown sericite. Green chlorite visible in foliated surfaces. Green talc also present.	3-4% disseminated grains of pyrite.	Possible relict lapilli?
327.90 TO 331.30	.CHT ARG MAF FLT GOUGE/	Grey, green, black. Fine grained. Mixed composition fault gouge comprising grey to black cherts & argillite, minor greenish mafic, and broken, crushed QDV fragments. Chert increases to bottom of interval.		Intense development graphite within fault zone.	5-7% pyrite as disseminated grains blebs and patches associated with QDV and argillite chert fragments. One single bleb in QDV has diameter 10mm.	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA:	ALTERATION	MINERALIZATION	REMARKS
331.30 TO 339.80	.ARG CHT/	Grey, black. Fine grained. Lithologically gradational contact with the above. The interval comprises faulted laminated to folded argillite and chert, (chert > argillite). Quartz dolomite veins and deformed patches occupy up to 12% of the interval. In response to changing stress direction related to faulting, foliation angle to c.a. decreases downhole. Intense faulting 335.8 to 336.8m.	65 50	Graphitic alteration argillite.	7-10% pyrite occurring in stringers, bands, isolated grains and blebs. Locally up to 15% pyrite in stringers & bands associated with QDV.	
339.80 TO 344.40	.ARG DOL MAF/	Grey. Fine grained. Faulted contact with the above unit. Interval comprises, faulted grey greenish, dolomitized mafics and black argillite. Approximately 40% of the interval is intensely faulted, with the formation of grey graphitic gouge. Possible het frag remnant in fault bx/gouge at: 9342.8-342.9L .Het Frag?/ argillite matrix supported clasts sericite and quartz dolomite.		Intense dolomitization of non argillite lithologies. Locally green talc and chlorite well developed (341.3-341.4). Similarly, locally well developed brown sericite laminae and patches.	1-3% pyrite in disseminated grains and occasional mm bands.	
344.40 TO 345.80	.QTZ DOL VN/	White. Partly brecciated, white quartz dolomite vein. (Qtz:dd 55:35). Minor sediment included in vein, and graphitic gouge/bx intervals at 345.2-345.25m and 345.3-345.4m.		Graphite well developed in gouge. Brecciation has produced a white soapy alteration mineral, probably talc but could be a clay mineral, Izaolin?	<1% pyrite.	
345.80 TO 357.80	.MAF SED FLT BX GOU/	Greenish-grey, black. Fine grained. Intensely faulted interval of grey, dolomitized mafics, grey cherts & black argillites. Grey clayey, graphitic gouge with brecciated fragments occupies 80% of the interval. Local healing of the brecciated matrix has taken place by quartz dolomite. Quartz dolomite veining increases to the bottom of the interval with a notable zone. 9356.6-357.8mL .Qtz Dol Vn/ with patches of graphitic argillite gouge.		Graphitic alteration of argillite. Intense dolomitization within blocky fragments. Local green talc, brown or grey green sericite.	3-4% visible pyrite distributed as disseminated grains, occasional blebby patches and remnant bands of 'dusty' pyrite. Base metal sulphides occur in a narrow zone. 9355.1-355.3L .2% Sp + Gn,Tr,Tt 5% Py/ within quartz dolomite veins and patchy grey dolomite altered mafics?	Chaotic faulted, altered interval of dominant sediments (cherts & argillite) with intensely altered mafic (volcaniclastic) interbeds.
357.80 TO 364.80	.ARG CHT/	Grey, black. Fine grained. The faulting persists into the interval as evidenced by the moderate to intensely fractured cherts and argillite. Compositional layering and foliation are parallel at angle to c.a. (35-55deg) Chert occupies 85% of the bottom 1m to 364.8m and exhibits wavy to tight folding & micro fractures.	45	Moderate dolomitization of siltite? bands within argillite and more intense alteration associated with veins and patches of quartz dolomite.	5% pyrite unevenly distributed in disseminated grains, blebs & occasional stringers.	
		END OF HOLE.				

Sample	From (m)	To (m)	Length (m)	ASSAYS																	COMMENTS			
				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	
BCD26857	82.90	84.40	1.50								54	118	17				1	367			1	0.1	3	
BCD26858	89.60	92.60	3.00								47	65	27				1	112			1	0.1	4	
BCD26859	93.80	95.30	1.50								71	53	45				5	112			1	0.1	16	
BCD26860	97.50	99.00	1.50								70	92	32				60	117			1	0.1	2	
BCD26862	105.30	106.80	1.50								44	77	48				188	140			7	0.9	7	
BCD26863	106.80	107.60	0.80								41	123	385				313	125			10	1.3	73	
BCD26864	107.60	109.10	1.50								46	59	37				399	191			9	0.7	90	
BCD26865	110.50	112.00	1.50								72	123	130				1714	130			57	3.5	129	
BCD26866	112.00	113.50	1.50								96	271	103				1287	149			39	3.4	43	
BCD26867	114.90	116.40	1.50								48	126	42				124	158			7	1.0	2	
BCD26868	117.80	119.30	1.50								36	79	68				416	192			13	1.9	46	
BCD26869	119.30	121.00	1.70	.017	.02	.01	3.6	.09			173	150	146				1018	178			17	3.6	92	
BCD26870	121.00	122.60	1.60	.029	.02	.03	13.8	.39			286	181	271				6516	63			79	13.8	392	
BCD26871	122.60	123.80	1.20	.008	.04	.01	3.4	.01			82	383	45				452	193			11	3.4	114	
BCD26872	123.80	124.50	0.70								17	24	31				540	112			7	1.1	106	
BCD26873	124.50	126.00	1.50								59	41	35				465	190			6	0.6	79	
BCD26874	129.00	130.50	1.50								39	308	63				1480	55			10	0.9	240	
BCD26875	131.30	132.60	1.50								43	107	22				126	60			1	0.8	38	
BCD26878	229.60	231.10	1.50								53	155	37				1	58			1	0.8	2	
BCD26879	231.10	232.60	1.50								65	144	36				33	81			3	0.4	2	
BCD26880	237.70	239.20	1.50	.006	.02	.03	6.3	.08			57	233	257				188	46			13	6.3	83	
BCD26881	239.20	240.70	1.50	.003	.01	.02	5.0	1.0			28	113	162				150	51			10	5.0	95	
BCD26882	243.80	245.30	1.50	.004	.01	.01	4.4	.09			40	125	115				382	54			16	4.4	86	
BCD26883	249.00	250.50	1.50	.009	.01	.01	7.3	.09			89	78	97				540	42			23	7.3	94	
BCD26884	255.50	257.00	1.50								70	50	50				559	198			11	1.2	15	
BCD26885	257.00	258.50	1.50								44	217	38				456	44			3	1.2	4	
BCD26886	264.50	266.00	1.50								9	48	22				17	70			1	1.2	1	
BCD26887	268.80	270.30	1.50								22	69	40				50	58			4	1.0	2	
BCD26888	274.30	275.80	1.50								67	314	162				1231	59			12	1.5	51	
BCD26889	275.80	277.30	1.50								53	310	116				669	68			6	1.5	50	
BCD26890	279.90	281.40	1.50								76	210	162				258	81			30	2.5	60	
BCD26891	281.40	282.90	1.50								20	98	59				174	50			8	1.7	6	
BCD26892	285.80	287.10	1.50								59	66	41				78	58			6	1.6	1	
BCD26894	293.20	294.70	1.50								95	58	21				163	22			1	1.4	2	
BCD26895	294.70	296.20	1.50								50	160	50				118	69			4	1.6	4	
BCD26896	297.80	299.30	1.50								43	189	145				225	78			4	1.2	45	
BCD26897	300.80	302.30	1.50								19	77	43				101	150			1	1.1	2	
BCD26898	303.80	305.30	1.50	.075	.21	.14	9.5	.10			747	2138	1412				340	46			36	9.5	102	
BCD26899	308.10	309.90	1.80								65	94	11				95	47			1	1.5	16	
BCD26900	311.10	312.60	1.50								38	83	27				16	62			1	0.9	2	

Sample	From (m)	To (m)	Length (m)	CU Z	ZN Z	PB Z	AG 6/T	AU 6/T	SB Z	AS Z	CU PPM	ZN PPM	PB PPM	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA Z	SB PPM	AG PPM	AU PPB		
BCD26926	314.20	315.70	1.50								24	87	34				116	61		1	1.1	3		
BCD26927	318.80	320.30	1.50								15	61	33				1045	79		8	0.7	24		
BCD26928	321.40	322.90	1.50								12	64	39				394	74		2	0.9	4		
BCD26929	322.90	324.40	1.50								14	42	50				519	44		3	0.8	32		
BCD26930	324.40	325.90	1.50								60	61	56				819	91		5	1.9	54		
BCD26931	327.90	329.40	1.50								73	219	143				206	116		7	1.5	19		
BCD26932	329.40	330.90	1.50								120	473	98				434	95		9	0.7	42		
BCD26933	331.30	333.00	1.70								21	51	47				289	81		3	0.5	12		
BCD26934	334.30	335.80	1.50								48	152	39				149	91		3	0.2	5		
BCD26935	336.80	338.30	1.50								71	132	33				135	225		4	0.3	2		
BCD26936	338.30	339.80	1.50								65	84	41				125	77		5	0.2	2		
BCD26937	339.80	341.30	1.50								35	60	9				147	34		1	0.9	9		
BCD26938	342.80	344.40	1.60								47	147	110				71	52		1	1.0	19		
BCD26939	344.40	345.80	1.40								14	44	39				1	17		1	1.4	2		
BCD26940	345.80	347.30	1.50								48	157	51				13	53		1	1.0	1		
BCD26941	348.70	350.20	1.50								119	144	101				14	181		1	0.9	2		
BCD26942	351.20	352.70	1.50								101	210	116				32	55		1	1.4	1		
BCD26943	353.20	354.70	1.50								62	144	137				89	256		1	1.4	4		
BCD26944	354.70	355.30	0.60	.008	.22	.13	2.8	.03			80	2198	1301				40	29		8	2.8	25		
BCD26945	355.30	356.60	1.30								16	102	90				50	33		4	0.8	1		
BCD26946	356.60	357.80	1.20								13	98	102				22	37		2	1.4	4		
BCD26947	357.80	359.30	1.50								37	113	77				54	98		4	0.5	2		
BCD26949	363.30	364.80	1.50								27	44	30				63	118		1	0.8	2		

HOLE NUMBER: C90-2

GEOCHEM. SHEET

DATE: 3-October-1990

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
BCD26861	100.30	103.30	3.00	85.28	5.76	0.01	0.44	.05	1.50	2.84	.02	0.29			23	38			5	121	0.6	35	.01		1.63	97.91	70	2
BCD26876	135.50	138.50	3.00	57.54	14.47	2.92	4.31	.48	2.32	7.79	.12	1.00			56	109			5	52	0.8	26	.01		0.26	91.28	1	1
BCD26877	182.50	185.50	3.00	56.94	14.51	3.97	4.36	.37	2.70	7.72	.13	0.99			48	102			10	89	1.2	37	.01		0.28	92.02	1	1
BCD26893	288.60	291.60	3.00	40.16	14.51	10.53	6.60	1.37	0.73	9.12	.24	1.22			99	57			5	31	1.3	10	.07		1.21	85.80	50	1
BCD26948	359.30	362.30	3.00	63.74	11.12	0.02	5.01	.27	2.33	6.64	.15	0.52			23	74			5	91	0.8	25	.01		1.26	91.17	1	1

HOLE NUMBER: C90-2

GEOCHEM. SHEET

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MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: C90-3

DATE: 3-October-1990

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 65.80	.CASING/	Much deeper than expected. It is possible that casing was sunk through fault breccia.				
65.80 TO 74.30	.CHT FLT BX/	Grey to pale green. Aphanatic grained. Friable, highly fractured grey cherty rock, with earthy, light green "wasabi" clay along fractures. Gradational contact down wards with minor mafics present but very broken. Overall about 15% qtz vein material. Minor earthy brown colours, but not sericitic.		Partial silicification, although a primary chert component is strongly suspected. Earthy clay alteration on fractures. Also patchy flesh-tone alteration resembling leucoxene?	2% py as fracture fillings.	75% recovery.
74.30 TO 136.00	.MAFIC TUFF?/	Light to dark green, apple green, and purple. Aphanatic grained. Strongly foliated, thinly banded interval of green & yellow tuffs (?) Friable with numerous fault brecciated zones throughout the interval. Limonite stained along fractures from 95.0-101.0m, and 133.0-138.5m. From 110.0-124.5m the interval is apple green with lesser purple bands and patches resembling "Victory Tuffs" from 1989 drilling on the Victory property. 9124.7-126.1l .Fragmental/ resembling green lithic wacke.	75	Notably the interval has very little sericite or chlorite development. The most prominent alteration product is clag, along fractures and in gouges. Only weakly limy to ferrodolomitic.	Only very minor fracture filling pyrite 1% py overall. 9131.0-132.5l .5% py/ as disse. and fracture fillings.	
136.00 TO 140.50	.BRN LITHIC WCKE/	Light to dark green. Fine to coarse grained. Conformable contacts with a clast supported lithic wacke. Clasts are lighter green and angular, some appearing to be feldspar porphyritic. Referred to as "Johnson Pyroclastic" by previous workers.		Weak fe-dol is pervasive.	2% diss py increasing towards end of interval. 9140.3-140.5l .5% py/	From 139.2-140.5 the interval begins to resemble "het frag", with light and dark, poorly sorted clasts, with pyrite in the matrix.
140.50 TO 143.90	.QV/FLT BX/	Black and white to grey. Fine grained. Fault brecciated interval containing 20% qtz vein material up to 20cm wide.		Hosted by the underlying unit of rocks.	Barren.	
143.90 TO 210.20	.LIMY MUD-STONE/	Black and green to purple. Aphanitic grained. Monotonous, thinly bedded package of black & green mudstone. Weakly calcareous, with light green bleaching along fractures. Beds of green wacke up to 10cm uncommon. BEDDING WEAK FOLIATION @ 179.5m	70 30	Weak fracture controlled bleaching to light green. On freshly split core the split surface appears all black.	None.	Resembles "EBP" unit of Schiarizza and Preto.
210.20 TO 217.20	.LITHIC WACKE/	Grey. Sandy to pebble size. Conformable and slightly interfingering contact with a bed of coarse sandstone to lithic wacke. Clasts are siliceous for the most part, with lesser mudstone rip-ups.		Porous unit with weak fe-dol. Mudstone bed from 215.0-215.4m.	None.	

HOLE NUMBER: C90-3

DRILL HOLE RECORD

LOGGED BY: A. HILL

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HOLE NUMBER: C90-3

MINNOVA INC.
DRILL HOLE RECORD

DATE: 3-October-1990

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
217.20 TO 230.70	LIMY MUD- STONE/	Black and green. Aphanitic to fine grained. Slightly broken contact with chaotic mudstone and lesser lithic wacke. Brecciation is common and a hinge zone is present from 220.0-220.5m. Otherwise the lithology is similiar to that found earlier in the hole. AXIAL CLEAVAGE @ 220.0m 90		Weak clay alteration along fractures.	None.	
		END OF HOLE.				

HOLE NUMBER: C90-3

DRILL HOLE RECORD

LOGGED BY: A. HILL

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Sample	From (m)	To (m)	Length (m)	ASSAYS															COMMENTS								
				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				
BCD26901	128.00	129.50	1.50	.002	.01	.01	0.4	.02				17	82	79													
BCD26902	129.50	131.00	1.50	.002	.01	.01	0.5	.01				20	50	63													
BCD26903	131.00	132.50	1.50	.002	.01	.01	0.4	.04				24	52	65													
BCD26904	132.50	134.00	1.50	.002	.01	.01	0.8	.01				16	54	49													
BCD26905	134.00	135.50	1.50	.002	.01	.01	0.4	.01				16	72	35													
BCD26911	139.50	140.50	1.00	.001	.01	.01	0.8	.01				7	92	40													
BCD26907	140.50	142.10	1.60	.001	.01	.01	1.1	.01				1	128	448													
BCD26908	142.10	143.90	1.80	.001	.02	.01	0.1	.01				13	189	87													

HOLE NUMBER: C90-3

GEOCHEM. SHEET

DATE: 5-October-1990

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	Ag PPM	Pb PPM	P2O5 %	Sr %	S %	TOTAL %	As PPM	Sb PPM
BCD26823	65.80	69.00	3.20	84.50	6.56	.39	.32	.23	1.67	1.79	.02	.40			8	3			5	111	0.8	25	.01	.30	96.28	73	6
BCD26824	83.00	86.00	3.00	64.49	15.30	.01	1.06	.37	3.71	7.00	.24	.91			60	95			5	87	0.1	44	.01	.16	93.34	47	2
BCD26825	112.00	115.00	3.00	68.38	13.23	.01	.80	.42	3.30	6.79	.20	.55			41	86			5	112	0.1	31	.01	.01	93.74	5	1
BCD26906	136.50	137.50	1.00	52.49	21.01	.01	1.38	1.83	4.71	8.79	.17	1.02			34	135			5	86	0.7	50	.07	2.59	94.16	16	4
BCD26909	151.00	154.00	3.00	62.43	16.39	.01	2.08	.61	3.28	7.53	.04	.88			73	178			10	78	0.7	31	.01	.05	93.40	9	1
BCD26910	197.00	200.00	3.00	61.72	16.98	.21	2.34	.87	3.75	6.76	.03	.86			44	149			5	66	0.9	31	.03	.74	94.38	1	1

HOLE NUMBER: C90-3

GEOCHEM. SHEET

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MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: C90-4

DATE: 18-October-1990

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 118.90	.CSG/					
118.90 TO 129.20	.ARG CHT/FL T BX/	colour: Grey black Grain Size: Fine Faulted; blocky broken interval of grey to dark grey, laminated to massive cherts with graphitic argillite laminae. Chert:argillite = 75:25 Laminated chert/argillite sections of core characteristically break into discs. The lower 1.5m of the interval is intensely faulted with graphitic chert arg bx and gouge present. Fault persists well into the underlying unit Minor qtz-dol veining <1%		Intense graphitic alteration of argillite	<1% pyrite distributed in dissemination and occasional stringers associated with QDV. Locally 5-7% py occurring in euhedral crystals and dusty diss parallel to compositional layering at 122.8-123.0m	118.9-157.0m Faulting
129.20 TO 137.50	.QTZ SER AR G CHT BX/	Colour: Grey yellow Grain Size: Fine Faulted interval comprising altered qz-sericitized cherts and arg with foliation Grey yellow and black fault gouge and breccia dominates the upper 1m with the remainder of the interval showing stretched, sheared intervals and intermittent gouge and breccia. Sericite dominates the interval with a ratio to the silicified zones of 55:45	80	Intense grey yellow sericite with laminae/compositional layering typically 1-5mm. Minor dolomite in association with silicification	1-2% py grains and blebs generally parallel to foliation	Core very friable along foliation
137.50 TO 146.10	.SILT ARG F LT ZN/	In faulted contact with above unit is an interval of argillite and wacke which has suffered intense faulting to gouge and breccia Zones within which bedding is still visible amount to only 19% White qtz-dol vns (unbrecciated) up to 5% of the interval occur parallel to and cross-cut foliation.	60	Moderate to intense dolomitization of the higher porosity siltite beds. Arg gouge and bx highly graphitic	1% py as diss euhedral crystals in fault gouge/bx and qtz-dol vn	
146.10 TO 151.90	.QTZ SER FL T ZN/	Colour: Grey green to pale yellow Faulting persists through a lithological and alteration boundary: sediments (v minor mafics?) have been altered to quartz and sericite and at a post alt date, have been intensely faulted to gouge and bx 15% of the interval remains as blocky sections between gouge and bx 2-3% multiphase white qz-dol vns, pre+post		Pre faulting lithologies have been mod to intensely qtz sericitized Pale greenish yellow sericite generally forms 1-2mm laminae parallel to foliation Faulting has generated alteration (grinding?) of QDV to white kaolin-like silt	Difficult to estimate overall % py, possible 3-5% Occasional fault breccia clasts have patchy fine grained py up to 20% over 1-2cm	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		faulting. Some brecciated QDV are healed within a qz dol matrix				
151.90 TO 157.10	.QTZ SER CH T/	Colour: Grey green to pale yellow Lithologically transitional to the overlying and underlying intervals. There is a progressive decrease in qtz ser alt and an increase in cht and arg downhole The interval is deformed with folded and faulted bedding/compositional layering. Folding generally appears to be open with faulting and micro faulting displacing and rotating the layered sericite py qtz and cht		Pale grey to yellow sericite is weakly to moderately developed	5-7% py is distributed as grains and aggregations in stringers and micro stringers Occasional dusty py in laminae parallel to sericite alt Blebs and blebby patches occur in assoc with silicification and QDV	
157.10 TO 161.30	.CHT ARG HE T FRAG/	Colour: Grey black Grain Size: Fine Minor fault marks the contact to the overlying unit. The lithologies, however, do appear conformable. The interval comprises zones of patchy, partially broken white quartz in a silicified arg matrix; minor sections of chert and arg vaguely layered; clast supported het frag; and sections of partially sericitized, silicified cht arg het frags. The het frag is notable at 158.3-158.5m due to its 95-100% clast supported texture		Locally intense silicification with 75% of the interval moderately silicified Lighter grey zns indicate bleaching Occasional moderate development pale green to yellow sericite	5-15% py distributed mainly as grains blebs and blebby patches associated with patchy qz vn, silicified arg and het frag. Occasional diss and blebs in bands with notable band of dusty py and blebs at 157.7-157.75m	
161.30 TO 170.70	.CHT/	Colour: Grey to dark grey Although core is broken the interval appears conformable to the overlying unit Grey to dark grey occasionally folded, cherts and ribbon cherts dominate the interval, to ~85% Chert ribbons and layering are divided by graphitic, black arg which varies in form from black laminae (1-5mm) to fine (<1mm) irregular stringers and stylolite-like filling		The chert has been bleached through diffuse qtz veining. White qz streaks, patches and vns blend into the chert host	2-5% py in diss grains and blebs to 5mm diameter Locally 15% py in diss blebs over 3-4cm in qtz vn chert arg mix Pale brown sphalerite as streaky aggregations and blebs occurs at 164.1 and 166.0m 9164.1-164.2L.2L sp/	
170.70 TO 288.60	.MAF LAP TU FF/	Faulted contact with the overlying cherts Yellow to green sericite, light to dark grey qz and dol alt after mafic lapilli tuff protolith Relict lapilli texture is visible To a depth of 250m, qtz-carb alt textures and qz-dol veining characterise the green chloritic tuff Up to 60% of the interval to 250m shows calcite/		Near the upper faulted contact the MLAT is moderately to intensely alt to qz ser and dol The intensity of qz ser alt gradually decreases downhole to 180.0m where gradually dark green chloritic alt prevails to the end of the hole	3-5% py occurs as spotted grains and blebs within the qtz ser alt MLAT. The py is often aligned to foliation Overall the py content diminishes the fresher the mafic volcanoclastic becomes Locally assoc with qtz dol vns and	

HOLE NUMBER: C90-4

MINNOVA INC.
DRILL HOLE RECORD

DATE: 18-October-1990

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE: TO CA:	ALTERATION	MINERALIZATION	REMARKS
		dolomite/qtz nodules, patches, wisps, veins and laminae giving an overall whitish to buff bleached colour. From 250.0m to EDH QDV occupy only 1-2% by volume Phyllitic foliation within the mafic lapilli tuff Minor intervals of fault bx/gouge occur between 225.5-228.0m and 245.5-245.9m	70	Dolomitization is pervasive throughout the mafic interval	flooding are concentrated bands and patches of py The more notable zones are: 9193.7-194.0L.20% py/ including 10cm massive band of vfg py up to 40% by volume 195.0-195.2m patches of fg and blebby py, 20-25% 198.4-198.5m 25-30% py, semi massive band 9204.6-204.8L.10-15% py/ as diss grains and blebs (<1mm) closely assoc with yellow brown sericite	
		END OF HOLE				

HOLE NUMBER: C90-4

DRILL HOLE RECORD

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HOLE NUMBER: C90-4

GEOCHEM. SHEET

DATE: 18-October-1990

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
26986	157.10	160.11	3.01	78.57	8.2	0.09	0.49	0.18	2.12	4.35	0.01	0.39	0.065		69	1094		97.96	110	62	1.7	134	0.12		3.37	97.96	695	35
26994	174.30	177.30	3.00	38.97	12.9	7.16	11.59	1	0.63	10.19	0.18	1.18	0.03		85	82		84.7	5	18	0.9	1	0.37		0.49	84.7	1	7
27000	218.50	221.50	3.00	42.19	14.78	7.09	6.79	1.09	2.47	8.4	0.17	1.66	0.045		138	51		85.53	5	38	0.9	7	0.32		0.51	85.83	1	6
27001	270.30	273.30	3.00	48.23	15.51	3.75	8.46	3.62	0.4	9.97	0.15	1.38	0.015		118	69		92.23	5	26	0.5	1	0.28		0.47	92.23	1	4

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: C90-5

DATE: 18-October-1990

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 39.60	.CS6/					
39.60 TO 48.40	.TERT BASAL T/	Colour: Dark greenish grey Grain Size: Fine to coarse Dark greenish grey, fine grained crystalline mafic groundmass with porphyritic crystals of pyroxene (augite) and possibly hornblende amphibole phenocrysts occupy ~15% by volume Fractures developed at in line with regional structure? have occasional carbonate vein infillings	70	Dark phenocrysts of pyroxene and amphibole altered to calcite between 47.9-49.4m Weak development of chlorite along fractures	No sx present	Interval is representative of a Tertiary basaltic flow? Note: angle of 70 deg to CA probably represents near horz fractures along flow banding (AH)
48.40 TO 49.10	.ASH SEDS/	Colour: Whitish green Grain Size: Fine to medium Conformable contact with the overlying volcanic flow Interval comprised a sequence of bedded sediments and crystal ash The section 48.4-48.9m is probably a chilled margin, beneath the volcanic. Fine altered light and dark green sediments and ash form 1-5mm laminae. These laminae have a graded contact downhole with a possible volcanic breccia? Mixed lithologies make up to breccia including angular to subangular qtz dol and greenish yellow alt sediments. the breccia has a width of 20cm and the interval is terminated by a grey clayed fault gouge		Weak carbonate alteration	tr py	
49.10 TO 49.40	.FLT GOU/	Colour: Grey Grain Size: Very fine grained Grey clayey fault gouge				
49.40 TO 49.80	.QTZ VN/	Colour: Greyish white Greyish white qtz vn with vuggy cavities Qtz appears cherty in texture and has minor development of stylolites				Looks epithermal

HOLE NUMBER: C90-5

DRILL HOLE RECORD

LOGGED BY: A.G. FRENCH

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HOLE NUMBER: C90-5

MINNOVA INC.
DRILL HOLE RECORD

DATE: 18-October-1990

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
49.80 TO 56.80	.ALT MAF/	Faulted contact with the above Qz Vn Dark green to yellowish green, alt, deformed and faulted mafic with minor sedimentary arg and chert component 956.1-56.8L. qtz ser maf tect/ green yellow grey, stretched tectonised sub interval within altered mafics		Moderate to intense brownish yellow sericite alt after chlorite Abundant chlorite gives 80% of the interval its characteristic dark blackish green colour	No sx observed	Interval has a patchy green to yellow chaotic appearance due to deformation stretching and fragmenting the host lithologies
56.80 TO 58.50	.ARG ALT MA F FLT BX/	Colour: Green to black Grain Size: Fine Graphitic argillite and altered mafic, fault bx and gouge zn Weathered altered remnants of qtz dol vns. Vns broken with dol alt to creamy brown coloured boxwork texture. Breccia and gouge occupies 50% of interval		Graphitic al of arg Fragments of chlorite and ser alt mafics	No visible sx	
58.50 TO 75.80	.ARG CHT MA F TUFF/	Colour: Pale to dark green and black Grain Size: fine Intensely sheared, folded chaotic mixture of black arg, chert, mafics, (tuffs?) and weathered corroded qtz dol QDV occupy 6% of the interval 64.2-64.6m Folded finely laminated pale and dark green sediments/tuff? Laminae 1-3mm, folded to bullseye structure Between 66.1-75.7m red brown limonitic staining becomes abundant, covering ~30% of the sub-interval	70	Minor weak carbonate alt 966.1-75.7L.limonite oxid'n/	No visible sx although oxidation of py may have contributed to iron staining	Core generally soft and friable. Scratches easily with knife
75.80 TO 194.10	.ARG QTZ SE R/	The contact with the overlying unit is marked by a minor fault and lithology and alt change. Iron staining ceases and pale green to yellow sericite becomes abundant. The interval comprises of a sequence of grey, black, sometimes cherty, args, grey, white qz vn and silica flooding, and pale green to yellow ser The appearance is generally chaotic with folding faulting, alt and qtz injection creating an overall patchy yellow, grey to black texture and structure.		Pale, grey greenish yellow sericite alt is abundant, occupying 35-50% of the interval Silicification including qtz vning has a similar range % by volume Dolomitization although ubiquitous in vns and zns qtz dol flooding is rare as a pervasive alteration except between: 9130.7-131.8L.Dol seds/	1-3% py distributed throughout as diss grains blebs, patches and stringers generally assoc with the zns of qtz dol vning and flooding. Py show moderate increase to 121.0m depth averaging 3-5% Notable stringer at 119.2m within QDV 7cm long by 2-3mm width	

HOLE NUMBER: C90-5

DRILL HOLE RECORD

LOGGED BY: A.G. FRENCH

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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		Argillite and sericitic laminae show tight disharmonic folding varying to more open structures.				
		Qtz vns in arg show bullseye structures and tight isoclinal folds				
		Notable zones within the overall interval which exhibit changes and variable bedding cleavage relationships to CA are as follows:				
		75.8-78.3m Dominantly pale yellow ser and pale yellow siltite?	50			
		78.9m Tightly folded disharmonic arg and ser cleavage at	80			
		123.0m Tightly folded arg and ser with slip along cleavage displacing folds	90			
		Compositional layering (although folded) parallel to CA				
		Argillite appears to increase downhole as a % of the deformed sequence from ~127.1m with the section 9148.2-157.2L.70% Arg/				Unusual arg occurs at 129.5-129.65m where dolomitic rounded frags are supported in a graphitic arg matrix. Similarly at 140.4-140.7m whter arg appears to be smeared between qtz dol Possible tectonic hydro-bx?
		From 157.2-194.1m, zones of ser alt again tend to dominate the lithologies.			Pyrite shows increase abundance downhole from the arg zone, with concentration ranging 5-10% locally 15-20%	160.9-162.4m Resembles what was referred to as hydrobreccia but is it tectonic? or a het frag facies? The stretched, boudinaged tectonite texture and structure are not present in their typical form
		Between 160.9 and 162.4m, subangular to subrounded granule to pebble size qtz clasts are mixed within a partly silicified matrix of black arg and pale greenish ser			Aspy mineralization also occurs in the interval 9160.9-162.4L.5% py, 2% As/ with concentrated mineralization -	
		The zone is probably wider than 1-5m but either side of the sub interval ser tends to mask the texture and structure			161.4-161.7m showing 10% py and 15% As	
		9160.9-162.4L. Qtz arg tect bx/			The aspy occurs as diss blebs to euhedral crystals (<1mm in size.	Aspy zone split into 3 samples of 0.5m
		From 174.4m to the end of the interval the grey yellow sericite is characterised by numerous qz (minor dol) py stringers, generally orientated parallel to foliation. The stringers average 1-2mm up to 5mm in width.	70		In 2-3cm of highly concentrated mineralization the aspy and py are intimately assoc with silicified arg and qz clasts	
					In addition to py in stringers, occasional bands 2-4cm wide also occur eg. at 183.8m and 185.4m	The qtz py stringers have been described in Cana Homestake logs as wispy py and blebby segregations
		From 9188.6-191.5L. Arg Tect Bx/(in part Het frag?) occurs, exhibiting a more typical tectonite texture.			Between 188.6-191.5m 7-10% py is distributed in diss, blebs and bands.	
		Minor intervals of gouge: 169.4-169.6m, 170.0-170.4m, and blocky core 171.0-172.0m			One single massive band 3-8cm wide occurs at 191.4m	

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: C90-5

DATE: 18-October-1990

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
194.10 TO 197.20	.QTZ SER AR 6 FLT BX/	Colour: Green to yellow and black		Arg fit gouge highly graphitic	No visible py	30% core loss
		Major fault bx and gouge zn within qtz ser and arg				Contact with "HW seds"
197.20 TO 219.40	.QTZ VN ARG SILT WKE/	Colour: Pale green to black white Grain Size: fine		Graphitic alt of arg	2 cubic clusters of py grains 3-4mm <2% py in remnant arg	Vns filling fractures associated with major fault Lithogeochem sample of bleached zones taken over the interval
		Interval of argillite siltite and wacke intruded by white qtz dol vns	55 to 85			
		QDV have bleached the host grey black arg/wacke to a pale green colour QDV occupy 29% of the interval and vary in width from 5cm to zones of 1.5m The bleached zones, including QDV attain a max width of 3.4m				
219.40 TO 246.00	.ARG SILT W ACKE/	colour: Grey black Grain Size: Fine		Moderately to highly graphitic arg Siltite and wacke interbeds are moderately dolomitized	Tr py	
		Grey black interbeds and laminations of arg and siltite. Arg dominating 65% of the interval with siltite/wacke occurring as 1mm to 5cm laminae and beds. One isolated interval 221.0-221.3m of siltite/wacke is the exception Angles to CA vary from 60 - 70 deg with one interval showing bedding rotated to at 225.6-226.1m. QDV occupy 1% of the interval and occur parallel to compositional layering; are occasionally folded and cross-cutting The end 3m of core are fractured and indicate the start of a fault zone	65 25			
		END OF HOLE 246.0m				

HOLE NUMBER: C90-5

DRILL HOLE RECORD

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HOLE NUMBER: C90-5

ASSAY SHEET

DATE: 18-October-1990

Sample	From (m)	To (m)	Length (m)	ASSAYS																	COMMENTS			
				CU I	ZN I	PB I	AG G/T	AU G/T	SB I	AS I	CU PPM	ZN PPM	PB PPM	S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA I	SB PPM		AG PPM	AU PPB	
26913	0.00	0.00	0.00									26	53	34				1	192		1	1.3	2	
26914	48.40	49.10	0.70									6	14	17				50	47		3	0.7	1	
26915	49.40	49.80	0.40									99	79	17				1	204		1	0.3	2	
26916	49.80	51.30	1.50									143	129	34				96	189		2	0.6	1	
26917	56.80	58.50	1.70																					
26917	66.10	67.60	1.50									91	98	35				1	108		1	0.2	2	
26919	74.30	75.80	1.50									57	110	48				1	117		1	0.2	2	
26920	75.80	77.30	1.50									27	59	36				12	254		1	0.2	2	
26921	78.60	80.30	1.70									70	79	47				8	155		1	0.4	1	
26922	84.80	86.50	1.70									68	73	45				22	185		1	0.2	2	
26923	91.20	92.70	1.50									53	82	45				51	230		1	0.5	1	
26925	108.80	110.30	1.50									30	111	36				31	113		1	0.8	3	
26951	114.30	115.80	1.50									45	75	42				18	95		1	0.4	1	
26952	119.10	120.60	1.50									52	84	42				40	100		1	0.4	2	
26953	124.00	125.70	1.70									51	79	41				1	161		1	0.2	2	
26954	129.00	130.50	1.50									95	76	31				25	213		1	1	2	
26955	134.00	135.70	1.70									54	76	25				107	94		1	0.7	1	
26957	145.30	146.80	1.50									57	105	56				309	84		1	0.5	2	
26958	148.40	149.90	1.50									40	70	38				178	66		1	0.6	1	
26959	154.50	156.00	1.50									49	93	67				196	78		1	0.4	2	
26976	159.40	160.90	1.50	.009	.02	.03	1.1	.01				91	217	272				738	85		1	1.1	2	
26960	160.90	161.40	0.50	.004	.01	.02	0.9	.01				37	137	165				664	53		1	0.9	4	
26961	161.40	161.90	0.50	.004	.01	.01	0.7	.19				41	83	101				12895	66		28	0.7	189	
26962	161.90	162.40	0.50	.006	.01	.01	0.4	.01				55	111	61				445	52		1	0.4	3	
26963	162.40	163.90	1.50	.002	.01	.01	0.4	.01				23	53	45				130	69		1	0.4	2	
26964	165.40	166.80	1.70	.005	.01	.01	0.7	.04				50	91	44				967	62		2	0.7	39	
26965	169.60	171.10	1.50	.006	.01	.01	0.2	.01				60	109	49				141	65		2	0.2	1	
26966	174.80	176.30	1.50	.009	.01	.01	0.4	.01				86	52	32				110	74		1	0.4	1	
26967	179.20	180.70	1.50	.004	.01	.01	0.5	.01				39	33	48				147	57		2	0.5	6	
26969	188.60	190.00	1.40	.006	.01	.01	0.7	.03				60	77	55				112	74		3	0.7	34	
26970	190.90	191.50	1.50	.006	.01	.01	1.0	.07				60	126	64				126	77		6	1	71	
26971	192.60	194.10	1.50	.011	.01	.01	1.0	.02				114	90	35				61	100		3	1	18	
26972	197.20	198.70	1.50	.002	.01	.01	1.4	.01				19	68	42				58	46		6	1.4	2	
26973	203.00	204.70	1.70	.001	.01	.01	0.9	.01																

HOLE NUMBER: C90-5

ASSAY SHEET

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HOLE NUMBER: C90-5

GEOCHEM. SHEET

DATE: 18-October-1990

Sample	From (m)	To (m)	Length (m)	SiO2	Al2O3	CaO	MgO	Na2O	K2O	Fe2O3	MnO2	TiO2	BA	Zr	Cu	Zn	Pb	TOTAL	Au	BA	Ag	Pb	P2O5	SR	S	TOTAL	AS	SB
				%	%	%	%	%	%	%	%	%	%	%	PPM	PPM	%	%	PPB	PPM	PPM	PPM	%	%	%	%	PPM	PPM
26192	41.80	44.80	3.00	46.38	14.25	11.36	7.45	2.98	1.77	7.66	0.12	0.98			39	60		93.39	5	146	2.1	10	0.30		0.05	93.39	1	1
26918	69.60	72.60	3.00	61.47	17.15	0.01	1.17	0.67	4.05	7.3	0.36	0.84	0.16		63	76		93.19	5	140	0.2	42	0.01		0.02		1	1
26924	98.60	101.60	3.00	61.45	16.63	0.01	1.99	0.33	4.19	6.4	0.33	0.83	0.355		46	66		93.77	10	291	0.2	57	0.01		1.27		82	2
26956	137.90	140.90	3.00	59.4	15.14	1.07	3.39	1.25	3.12	6.99	0.38	0.9	0.12		69	80		92.97	5	97	0.8	41	0.01		1.21		72	1
26968	183.50	186.50	3.00	62.48	12.24	0.01	1.55	0.17	3.11	10.64	0.15	0.53	0.065		260	1482		97.87	120	55	2.5	1163	0.01		6.94		1334	19
26974	212.20	215.20	3.00	53.46	19.17	0.79	2.34	5.96	3.09	6.57	0.06	0.95	0.085		37	50		93.63	5	67	0.6	33	0.01		1.16		73	2
26975	233.40	236.40	3.00	61.4	16.79	0.67	2.76	1.15	3.33	6.97	0.04	0.83	0.135		44	139		94.63	5	132	0.8	35	0.01		0.55		1	1

HOLE NUMBER: C90-5

GEOCHEM. SHEET

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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
0.00 TO 36.50	.CS6/OVBRD/					
36.50 TO 48.30	.TUFF ARG/	Colour: Black pale grey to green Grain Size: Aphanitic to medium grained Chaotic; buckled folded, boudined, brecciated interval of graphitic argillite, numerous quartz dolomite veins, greyish green and brown altered tuffaceous interbeds and patches of pale green 'blocky poorly foliated sericite. The latter is probably an end alteration product of the tuff. Notable sericite/tuff patches and interbeds vary in width from 5-30cm, the greatest section occurring between 48.0-48.3m		Intense dolomitization throughout the non argillite lithologies, with the exception of the 'blocky' sericite Sericite varies from pale grey green to a more typical dark yellow brown.	1-3% pyrite is distributed as isolated grains, blebs, blebby aggregations and occasional fine dusty pyrite in bands of 2-3mm width	
48.30 TO 73.70	.SILT ARG/	Colour: Grey to white and black Grain Size: Fine grained The interval has a minor fault at the contact with the above unit and is distinguished by the absence of a tuffaceous component. The sequence of sediments is similar in that they are equally as deformed, boudined and brecciated The core is very broken and fragmented indicating much of the zone is faulted. White patchy quartz and dolomite occupy 5% of the interval		Quartz dolomite flooding preferentially alter the porous siltite zones, possibly affecting 4% of the interval ~20% of lithologies are silicified	Py content and distribution are variable throughout 1-15% py is distributed as grains blebs and patches Coarse euhedral py occurs in a QDV at 59.2m 952-53.2L.5%py 5%sp <1%cp/ occurs within a silicified zone of argillite/siltite. the sp occurs as isolated dark brown, irregular blebs up to 10mm in size (long axis) cp also occurs in isolated blebs, but of smaller size, to 3mm maximum Additional single blebs sp widely separated, occur to 55.1m	
73.70 TO 75.90	.ARG CHT FL T BX/	Argillite and quartz dolomite veins are intensely faulted to grey clayey graphitic gouge and bx The lower 10-15cm fo bx is healed with quartz dolomite matrix		Gouge/argillite highly graphitic	5% py visible in remnant fault bx clasts	
75.90 TO 78.20	.PY ARG CHT /	Colour: Black to light grey Grain Size: Fine grained Grey, fractured, folded ribbon cherts with 1-2mm arg laminae Vns and patches of white qtz dol occupy 10% of the interval The lower 0.5m is faulted and grades into the intensely faulted breccia and gouge below	70	Minor bleaching assoc with qtz dol veinig	15-25% py throughout, occurring mainly as fine grained to dusty laminae and bands. (Primary py?) Trace sphalerite occurs in assoc with QDV	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
78.20 TO 85.50	.CHT QTZ SE R FLT BX/	Colour: Grey to black yellow and green Grain Size: Fine grained Transitional zone of lithologies, varying from arg and chert to qtz ser which have been intensely faulted to bx and gouge Quartz and sericite tend to dominate the gouge/bx from about 80.9m Blocky core sections occupy 14% of the interval		Moderate to intense grey white quartz and pale greenish yellow sericite	5-10% py occurs as dusty py in bands within blocky sections of core. Overall, <7% py	
85.50 TO 91.20	.QTZ SER/	Colour: Grey to white and pale green Grain Size: Fine grained Greyish white quartz (minor dol) vning and flooding with interlayers of pale greenish yellow sericite. Ration silicified sections to sericitized 45:55 Phyllitic foliation at Interval is fractured and includes 10% fault gouge and breccia The lower 1.0m of has a lithologically gradational contact with the underlying unit even though minor gouge and fracturing is present	70	In addition to pale green yellow sericite, 1-2% of the interval is yellow to brown ser, containing spotted py, which is indicative of a mafic (volcaniclastic) component.	3-7% py is distributed in diss grains, blebs and wispy stringers	
91.20 TO 113.10	.SILT ARG C TO HERT/	Colour: Shades of grey to black Grain size: Fine grained Intermittently faulted zone of deformed to laminated argillite (+ minor siltite?) and chert 91.2-96.2m the cherts and argillites are moderately to intensely strained. Locally compositional layering has been rotated and cleavage is well developed at 93.7m Silicified sections (chert qtz vn + silicified siltite?) dominate the interval in ratio 60:40 96.2-100.6m Bleached, light grey cherts and patchy white qtz vns dominate 95% of the sub-interval. The cherts exhibit relict ribbon banding and black argillaceous stylolites The chert also shows strain with a silicified chert fault breccia between 99.6-100.6m 100.6-103.1m There is a transitional sub-interval of fault bx, strained stretched, faulted quartz	70	Qtz dol vning and assoc flooding has resulted in bleaching of the dark cherts to a light grey colour	Pyrite has an uneven distribution throughout the interval varying from 1-15% The concentrated py sections occur over small intervals of 2-10cm; with py distributed as patches or blebby agglomerations Bleached cherty sections tend to be py deficient compared to darker cherts + arg Base metal sx occur within an interval of blocky, black silicified, graphitic chert and arg between: 9106.6-107.7L.1Zsp <1% cp gn tr tt/ associated with concordant and cross cutting QDV. Most mineralization concentrated in 25m width QDV at 105.7m. Blebby sp (honey brown) closely asoc with blebby py, cpy + gn sp>cp>gn	91.2-96.2m Core very friable due to fault gouge, bx and overall shattering 97.6m Vuggy qtz dol occurs with qtz crystals and dol flakes growing into a cavity Fault bx between 99.6-101.1m shows transition from healed silicified chert bx to friable graphitic chert + argillite

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: C90-6

DATE: 18-October-1990

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		sericite and folded, microfaulted layered arg and chert (silicified siltite?)		(volcaniclastic) component		
		103.1-113.1m Laminated cherts and arg, bleached light grey cherts and silicified black cherty arg occur The argillite and chert laminae vary from 1-10mm White qtz and creamy white dol vns and patches cross-cut the cherts and arg, eg 108.8-106.6m cross shaped white QDV Blocky, broken, brecciated core between 105.7-106.6m indicated a fault zone				
113.10 TO 115.30	.QTZ DOL VN /	Colour: White Interval dominated by white qtz (minor) dol vn and flooding wih patches of grey chert, arg and arg stylolites. The upper contact is blocky and broken, ie faulted whereas the lower contact is complex with mixed arg and qtz blending together		Graphitic alt of arg	QDV barren of mineralization, however patches of arg contain blebs and dusty bands of py eg 114.9m, 5cm arg (bed?) with 15-20% py	
115.30 TO 162.30	.ARG CHT/	Colour: grey to black		Light grey chert sections, ~ 10% of the	Py is unevenly distributed, with a	
162.20 TO		Relatively thick sequence of laminated to deformed black graphitic arg and dark to light grey cherts Chert dominates over arg in ration 70:30 Laminated sections show 1-3mm arg laminae interbedded with 1-5mm chert laminae at angle to CA Similar laminated sections are stretched and boudined. Examples of laminated and stretched sections are found at 127.7m and 128.8m respectively The main chert intervals with thin laminae of arg are folded. Numerous small scale (1-5cm) bulls-eye structures are developed with slip occurring along well developed cleavage slip planes, 1mm or less, in width, are filled with graphitic arg. A notable interval displaying this structure occurs between 129.8-131.0m QDV occur as dol rich and poor varieties. Where dol occurs in abundance, creamy, brownish white dol crystals are visible. Notable vein, 125.0-125.6m occurs roughly parallel to foliation	70 70	interval, appear to have resulted from bleaching by qtz vning and flooding Arg intervals are highly graphitic	range in concetration from 1-20%. It occurs in a variety of forms:- Fine diss assoc with arg laminae and irregular stylolite-like lines in chert. Patchy to banded diss grains and blebs occur in zones containing a greater % of arg The greatest % py is found in zones of arg/chert invaded by qtz (minor dol) vning. Base metal sulphides are confined in occurrence to quartz (minor dol) and qtz dol vns. The principal occurrence occurs in a 2-3cm qtz vn cross-cutting dark grey chert with thin graphitic arg laminae	2/3 of core sent for analysis #27019
					9118.9-119.0L.7%sp 2%tt tr cp py/ (<0.2% cp py) Dark brown sp occurs in large blebs up to 15x30mm	

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DRILL HOLE RECORD

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FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE TO CA	ALTERATION	MINERALIZATION	REMARKS
		/compositional layering. The lower 1-7m of the interval 9160.6-162.3L are .healed flt bx/ comprises broken, brecciated fragments of chert in a healed fine matrix of chert and arg			Grey black, soft, tt in 2 blebs up to 7x10mm are intimately assoc with the sp Minor grains of cpy and py are scattered on the periphery of the spand tt At 125.4m 2blebs sp occur within a QDV (50% Qtz 50% dol) and are in close assoc with a graphitic arg stylolite. Largest bleb 5.3mm Notable py zones occur at 9127.1-127.5L .10Zpy/ 132.8-133.3m 7-12% py 9152.7-153.3L.10-15% py/	
162.30 TO 173.50	.TUFF CHT A R6/	Colour: Greyish green to brown and shades grey to black The fault within the overlying cherts affects 10 cm of the tuff/cht/arg interval Overall, the interval is comprised of chert + arg and tuffaceous volcanic in ration 70:30 The lithologies are chaotic, brecciated, boudined and folded, giving a complex picture of grey and white fragments in a black arg matrix Patchy grey white quartz dol vns occupy 10% of the interval		The tuffaceous zones have no relict texture visible; banded brown sericite is separated at intervals by dolomitised tuff 9162.1-164.6L.dol ser tuff/ Minor green talc occurs parallel to sericite	2-4% py is distributed in diss grains blebs and occasional patches and bands	Similar to the interval 36.5-48.3m
173.50 TO 191.60	.CHT ARG TE CT/	Colour: Mainly black, grey and white patches Grain Size: Fine grained Contorted, chaotic brecciated interval of arg, chert and QDV in ratio 70:25:5 Grey chert, white Qtz vn frags and patches have varying orientation in a black graphitic arg matrix Interval is faulted between 173.9-174.7m to produce highly graphitic arg gouge and bx 188.0-191.6m shows an increase in QDV, and brecciated, stretched chert, such that the ratio arg:chert:QDV is neared 40:30:30 A tuffaceous component may be present between 188.0-188.6m. The sub interval is greenish brown dolomitised and sericitized 9188.0-188.6L.Tuff Arg/		Argillite highly graphitic and partly silicified Minor green talc assoc with Qtz vn patches	Py shows a marked increase from the above interval, particularly the zone 9178.8-187.3L.15-20% py/ Pyrite occurs mainly as fine grained patches and bands, occasionally folded in harmony with chert and arg eg. at 179.6m (Primary py?) 2-3mm folded bands/beds Coarser grained py blebs occur in assoc with QDV patches and vns	

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE: TO CA:	ALTERATION	MINERALIZATION	REMARKS
191.60 TO 195.50	.CHT ARG HE T FRAG/	Transitional lithological contact with the above unit. Consistent het frag texture starts at ~195.5m The interval is very mixed with patchy QDV, grey cherts and black arg, stretched parallel to foliation Readily indentifiable Het frag occupies 25% by vol	70	Dark yellow brown sericite with spotted py locally developed at 192.1, 194.1, and 195.3m possibly indicating some tuffaceous component. (Maybe large clasts in Het Frag?) Green soapy talc often assoc with brown ser	Overall 10% py with local concentration to 25% over 2-3cm at 192.0m Pyrite occurs as fine grained diss, blebby bands and fine grained patches. Base metal sx occurs in a bleached zone of chert and dol. 9193.7-194.1L.7%py 2%sp tr gn cp/	
195.50 TO 204.30	.HET FRAG/	Gradational contact with the above interval White qtz, grey chert and brown sericite fragments from coarse sand to small pebble size form a clast to matrix (arg) supported, heterolithic fragmental conglomerate Clasts generally show some stretching parallel to foliation at angle to CA Where the matrix is sandy, moderate to intense dolomitization has taken place Intermittent minor faulting at 197.6m and 198.5m	70 to 80	Dtz dol has flooded the more porous intervals, occasionally forming mottled grey white replacement textures, in vein like form eg. 201.8m and 202.5m	5-10% py occurs in diss, blebs, patches and bands Local concentration to 20% over 1-2cm occurs at 196.6 and 201.1m	
204.30 TO 241.50	.CHT ARG TE CT/	Colour: Grey to greyish white and black Grain Size: Fine to coarse Chaotic, folded, boudined (tectonised) interval of cherty argillites. The contact with the overlying het frag appears conformable The black graphitic ar forms a matrix which generally supports stretched fragments, bands, & patches of chert (including qtz dol siltite?), qz vn and 5-20cm zones of quartz dolomite alt (flooding and veining) An overall chaotic picture of greys and whites on black Sub intervals showing buckled compositional layering at angle to Ca ~ration arg to light coloured chert QDV is 60:40 Intermittent fracturing and faulting	50 to 60	Quartz dolomite veining and flooding is abundant with notable patches of alt and veining 204.5-205.4m 224.2-224.5m 228.2-228.4m 230.1-230.8m 232.3-232.6m Dolomitized lithologies and 1-5mm bands of brown sericite in the lower 0.5m of the interval may indicate a minor mafic tuff component	5-10% py is distributed in diss grains and blebs, patches and occasional bands Blebby agglomerations assoc with QDV and patches qtz-del alt, constitute the greater part of the py concentr. No base metals observed	
241.50 TO 245.70	.HET FRAG/	Colour: Black grey white yellow Grain Size: Fine to pebble size Het frag varies from a typical clast supported conglomeratic mixture of quartz, chert, arg and ser clasts varying from sand to pebble size; to a mainly quartz fragmental supported in a sericite		Pale grey yellow sericite is moderately well developed in the interval 242.9-243.8m, but intense sericitized het frag? occurs between 244.6-245.1m	3-7% py is distributed as grains and blebs, occasional bands and patches Blebby bands occur in the qtz sericite at 245.0m parallel to layering	Interval contains an interesting section of quartz-sericite conglom.

MINNOVA INC.
DRILL HOLE RECORD

HOLE NUMBER: C90-6

DATE: 18-October-1990

FROM TO	ROCK TYPE	TEXTURE AND STRUCTURE	ANGLE: TO CA:	ALTERATION	MINERALIZATION	REMARKS
		arg matrix 9242.9-243.8L Qtz ser het frag/ Blocky broken core 242.5-242.9m indicated fault/ fracture				
245.70 TO 255.90	.TUFF CHT A RG-TECT/	Although blocky core marks the contact with the above unit, (possible minor fault) the lithologies appear to be conformable The interval is gradational from cherty argillite tectonite to qtz sericite arg (yellow and black)		Dolomitized and yellow brown sericitized intervals indicate probable mafic tuff component	3-7% py in diss and blebs. Occasional fine (1-2mm) bands parallel to compositional layering. Trace sp at 247.2m	
255.90 TO 302.20	.CHT ARG QT Z SER/	Colour: Grey black yellow Grain Size: Fine grained Relatively thick sequence of 'black and yellow' qz sericite and cherty arg ('+/- siltite?') The interval varies from tectonised cherty arg zones to layered black arg and pale yellow ser, to massive qtz ser zones. The approx. proportion of these 3 mixed lithology types is 30:40:30 Sections show compositional layering and foliation (60-70 deg) Ser and arg layered sections locally show folding with angular zig-zag parasitic minor folds eg. 271.3m, cleavage developed at Faulting occurs intermittently through the section Notable zones occur as follows: 264.6-264.9m Gouge 267.0-267.4m Gouge/bx 272.6-273.2m Gouge/bx The sub-interval 275.3-286.5m comprises friable blocky core, fault bx and gouge 298.4-298.7m The lower contact with a qtz-dol vn is faulted	65 30	Pale yellow ser well developed in up to 70% of the interval Dolomitization locally intense, identified as zones of patchy, mottled grey and white chery arg zones (possible re-silicified) have minor dolomite stringers	1-5% py distributed mainly as grains and blebs assoc with zones of silicification Py wisps and stringers are generally poorly developed in sericite, except towards the lower 2m of the interval, where characteristic grains and blebs are scattered along quartz stringers 281.6-285.5m 50% core loss	
302.20 TO 304.80	.QDV + CHT FLT BX/	Colour: Black grey white The upper 0.2m of the interval comprises graphitic arg gouge and fragmented qtz vn 302.4-303.3m A qtz dol vn is intimately assoc with cherty, graphitic arg and py schist 303.3-304.8m Cherty arg and QDV form a blocky broken interval including zones of graphitic		Argillite intensely graphitic		302.4-303.3m Py unevenly distributed. Up to 30% occurs in a blebby 5cm band. A similar % also occurs in the friable schistose material Sp, cp and gn occur as irregular size

Sample	From (m)	To (m)	Length (m)	ASSAYS											S.G.	AG OZ/T	AU OZ/T	AS PPM	BA PPM	BA %	SB PPM	AG PPM	AU PPB	COMMENTS	
				CU %	ZN %	PB %	AG G/T	AU G/T	SB %	AS %	CU PPM	ZN PPM	PB PPM												
27003	46.30	47.80	1.50	.005	.01	.01	2.0	.01				54	38	42				40	80		4	2	2		
27004	52.00	53.20	1.20	.019	.24	.06	.35	.01				186	2513	618				45	60		11	3.5	5		
27005	53.20	55.10	1.90	.008	.04	.02	2.2	.01				83	445	223				30	75		6	2.2	1		
27006	58.50	61.20	2.70	.007	.01	.01	1.6	.01				81	61	46				72	68		2	1.6	2		
27007	73.70	75.90	2.20	.007	.02	.01	0.7	.03				73	166	53				302	83		12	0.7	28		
27008	75.90	77.60	1.70	.007	.03	.02	2.4	.23				71	274	155				2143	56		177	2.4	228		
27009	77.60	78.50	0.90	.006	.03	.01	1.9	.27				60	259	113				1626	96		79	1.9	267		
27010	85.50	87.00	1.50	.005	.01	.01	0.3	.02				48	66	53				295	72		5	0.3	18		
27011	92.60	94.20	1.60	.005	.01	.01	0.9	.08				47	108	81				714	82		16	0.9	83		
27012	96.20	97.70	1.50	.004	.01	.01	1.2	.08				42	125	143				205	23		5	1.2	76		
27013	101.60	103.10	1.50	.007	.04	.01	0.5	.06				65	380	78				378	78		10	0.5	57		
27014	106.80	107.70	1.10	.128	.29	.18	24.9	.21				1283	2863	1799				454	30		244	24.9	210		
27015	107.70	109.20	1.50	.005	.01	.01	1.6	.01				48	107	69				102	33		10	1.6	9		
27016	109.20	110.70	1.50	.014	.02	.01	1.8	.08				135	168	53				894	150		24	1.8	83		
27017	113.80	115.30	1.50	.009	.01	.01	1.5	.06				88	94	93				306	61		20	1.5	56		
27018	117.30	118.90	1.60	.004	.01	.01	1.3	.01				38	114	47				84	54		8	1.3	4		
27019	118.90	119.00	0.10	1.13	3.94	.03	348.7	1.80				11370	39448	327				952	53		6664	348.7	1750		
27020	119.00	120.50	1.50	.008	.02	.01	3.5	.04				80	247	48				299	41		52	3.5	39		
27021	120.50	122.20	1.70	.012	.04	.01	5.2	.19				118	390	134				948	42		73	5.2	186		
27022	122.20	123.70	1.50	.014	.01	.01	3.5	.18				138	125	58				1173	140		68	3.5	178		
27023	125.00	125.60	0.60	.002	.02	.01	2.6	.01				20	180	57				27	20		8	2.6	4		
27024	126.80	127.90	1.10									83	66	45				379	125		19	1.8	46		
27025	132.50	134.20	1.70									57	77	45				148	124		5	1.1	1		
27052	152.10	153.70	1.60									98	227	47				112	141		2	1.1	23		
27053	159.10	160.60	1.50									102	185	43				119	119		2	1.1	37		
27054	162.30	163.80	1.50									147	143	44				82	66		1	1.4	18		
27055	169.80	171.30	1.50									48	55	51				35	77		1	0.7	12		
27056	174.70	176.20	1.50									74	71	128				222	147		14	1.6	43		
27057	178.80	180.40	1.60									123	193	118				134	137		13	1.5	20		
27058	181.90	182.40	0.50									126	60	61				91	174		5	1.1	17		
27059	185.00	186.80	1.80									130	219	121				102	169		9	1.7	22		
27060	190.00	191.60	1.60									54	145	88				26	84		2	0.9	3		
27061	191.60	193.10	1.50									96	409	246				249	67		11	1.2	19		
27062	193.10	194.10	1.00	.008	.14	.05	2.1	.07				80	1356	490				187	35		15	2.1	70		
27063	194.10	195.50	1.40									95	593	337				359	55		14	1.3	42		
27065	202.80	204.30	1.50									116	453	261				157	71		2	1.7	28		
27066	204.30	205.90	1.60									22	60	66				12	54		1	1.2	16		
27067	210.10	211.60	1.50									51	68	42				44	81		1	1.1	27		
27068	217.90	219.40	1.50									78	66	39				92	64		1	0.7	19		
27069	224.20	225.90	1.70									60	92	36				174	54		1	1	5		

HOLE NUMBER: C90-6

ASSAY SHEET

DATE: 18-October-1990

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	
27070	229.80	230.30	0.50								65	49	43				109	64		1	1.5	18	
27071	235.30	236.80	1.50								74	58	46				100	137		1	0.9	2	
27072	240.00	241.50	1.50								125	175	62				214	66		1	1.5	81	
27073	241.50	243.00	1.50								208	764	316				77	47		1	2	37	
27074	243.00	244.70	1.70								96	175	163				118	72		1	1	9	
27101	255.90	252.40	-3.50								45	75	41				45	103		1	0.5	1	
27102	262.80	264.30	1.50								68	88	68				20	98		1	0.3	1	
27104	288.10	289.60	1.50								16	74	44				44	68		1	0.1	2	
27105	293.50	295.20	1.70								35	222	76				153	85		2	0.2	23	
27106	299.00	300.70	1.70								34	156	78				339	72		4	0.5	37	
27107	300.70	302.20	1.50	.006	.01	.01	0.1	.02			56	71	41				240	120		1	0.1	18	
27108	302.40	303.10	0.70	.102	.22	.19	14.1	.11			1017	2243	1917				702	78		106	14.1	108	
27109	303.10	304.80	1.70	.010	.01	.03	1.2	.02			96	86	261				202	127		19	1.2	19	
27110	304.80	305.80	1.00								36	57	74				260	211		9	0.8	18	
27111	305.80	306.90	1.10								45	63	110				271	203		11	1.3	13	
27112	306.90	308.00	1.10								89	1387	245				569	162		17	1.3	61	
27113	308.80	309.50	1.50								45	398	194				634	156		19	0.9	58	
27114	310.90	312.40	1.50	.002	.01	.01	0.7	.02			21	40	60				201	96		9	0.7	17	
27115	313.80	314.30	0.50	.044	.22	.10	14.1	.05			442	2224	997				440	51		131	14.1	46	
27116	319.00	320.70	1.70	.003	.01	.01	1.0	.01			32	118	39				53	83		3	1	2	
27117	320.70	322.20	1.50								61	92	41				85	178		3	0.4	6	

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ASSAY SHEET

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GEOCHEM. SHEET

DATE: 18-October-1990

Sample	From (m)	To (m)	Length (m)	SI02	AL2O3	CAO	MGO	NA2O	K2O	FE2O3	MNO2	TIO2	BA	ZR	CU	ZN	PB	TOTAL	AU	BA	AG	PB	P2O5	SR	S	TOTAL	AS	SB
				g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
27002	38.70	41.70	3.00	58.35	14.36	3.05	2.56	0.73	2.88	6.37	0.33	0.85	0.085		62	58		90.65	5	50	0.5	45	0.41		0.67		65	1
27051	139.30	142.30	3.00	66.8	5.89	6.12	3.71	0.18	1.31	3.78	0.17	0.27	0.065		110	149		91.17	10	69	2.2	76	0.53		2.33		55	26
27064	195.50	198.50	3.00	75.33	7.65	1.37	0.91	0.51	1.36	6.18	0.05	0.56	0.04		31	201		98.82	10	98	0.5	105	0.22		4.63		198	12
27025	247.00	250.00	3.00	65.59	12.52	0.39	2.91	.50	2.82	5.65	0.30	0.60			10	71		92.13	5	65	0.2	42	.20		0.53		32	1
27103	270.30	273.30	3.00	52.4	13.95	3.84	5.05	0.58	3.1	6.34	0.44	0.63	0.07		7	69		87.35	10	140	0.3	50	0.45		0.51		1	1