ABMINCO N.I.
CLEVELAND MINE

CATEGORY U/G Expl.

HOLE No.: 1308 REF No 18554

GENERAL DATA

Objective: RL 252 AF-AG Sect

Area of Operation: 11 Kahki Location: 2m Sth AD Sect

Collar R.L.: 27703m. Co-ordinates: 15294·316 N, 10606·929 E.

Bearing of Hole: 144° 20' 41" (146) Angle of Hole: -14° 06' 59" (-15) Final Depth: 140 m

Drilling Commenced: 26/7/78 Completed: 8/8/78 Logged by:

DRILLING DATA

Drilled by: ADD Non Coring:

Drilling Rig: F30 Air Coring:

Driller(s): R. Lawson, R. Hennard.

Core Recovery:

HOLE SURVEYS

HOLE No.: 1308

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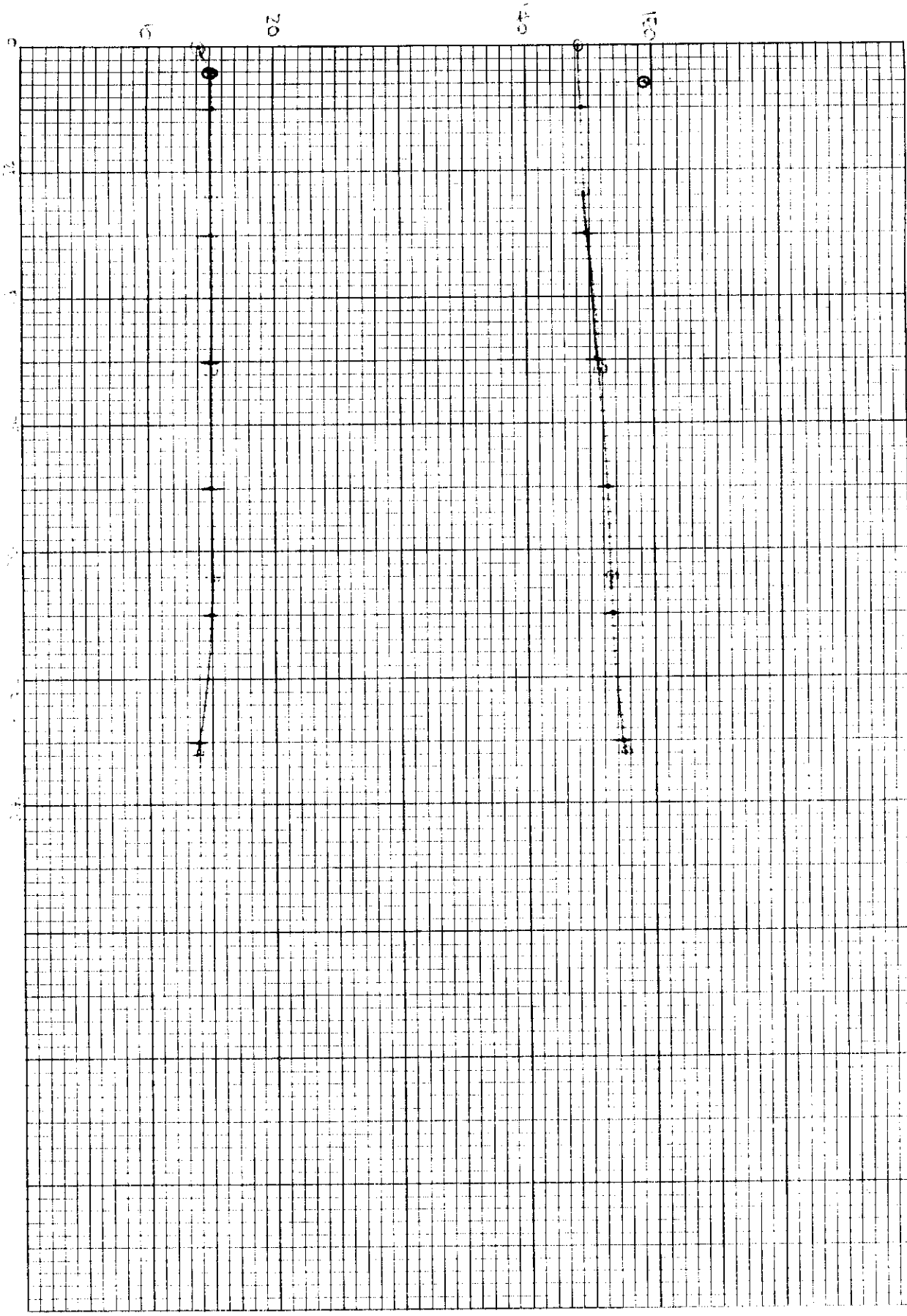
ABMINCO N.L. - Cleveland Mine

DIAMOND DRILL HOLE DATA

Hole No. 1308

Sheet No.

PROGRAM DATA				SURVEY DATA				INTERPOLATED DATA		
				Instrument Type	Depth	Dip	Azimuth	Depth	Dip	Azimuth
1	Attitude	—	(+) (-)	Survey	0m	14·1164 ?	144·3447	12·5	15	~~144·5~~ 144·5
				Camera	6 m	−15	149½ (153½)	37·5	15	~~144·75~~ 144·75
2	Hole No.	1308			30m	−15	144½ (148½)	62·5	15	145·5
					64 m	−15	145¾ (149¾)	87·5	15	146·25
3	Down Hole Interval	25			106m	−15	146½ (150½)	112·5	15	146·5
					140m	−13¾	147½ (151½)	137·5	14	147·25
4	Collar Co-ords.	15294·316	N							
5		10606·929	E							
6	Collar R.L.	27703								
7	Halls Sect. GH Intersect Point	15336841	N							
8		10674·751	E							
9	Battery Sect. AF Intersect. Point	15174·748	N							
10		10751·365	E							
11	Start Plot (Depth)	ϕ	ϕ = Collar							



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DOWN HOLE PLOT

Hole No: 1308

Sheet No:

DEPTH	PLAN			CROSS SECTION		LONG SECTION				DEPTH	PLAN			CROSS SECTION		LONG SECTION			
	N	E	RL	Dist.from H.R.P.	Dist.from B.R.P.	Dist. from Halls	Sect GH	Dist from Batt.	Sect AF		N	E	RL	Dist.from H.R.P.	Dist. from B.R.P.	Dist from Halls	Sect.	Dist from Batt	Sc
0	15294·316	10606·929	277·03																
25	15274·66	10620·95	270·56																
50	15255·00	10634·97	264·09		-137·01														
75	15235·10	10648·65	257·62		-117·28														
100	15215·02	10662·07	251·15																
125	15194·88	10675·40	244·68																
150	15174·48	10688·52	238·63							140·0									

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HOLE No.: 1308 A1

SAMPLE DATA

SHEET No.:

LENS	SAMPLE No.	ROCK TYPE	Σ	INTERVAL From	INTERVAL To	Length (L)	Assays (A) % Snt	% Sns	% Cu	Specific Gravity Dry	Wet		S.G.
	222723	LODE		0.00	1.13	1.13	1.34	0.03	0.43	846	576		3.13
	222724	LODE		19.95	20.28	0.33	0.12	0.01	0.22	381	256		3.05
X	222725	LODE		108.23	109.20	0.97	1.10	0.01	0.10	751	513		3.16
6	6	LODE		109.20	110.39	1.19	0.72	0.02	0.09	734	505		3.21
7	7	LODE		110.39	111.27	0.88	1.37	0.02	0.16	813	553		3.13
BSTA	8	CHERT		111.27	112.06	0.79	0.16	0.01	0.06	485	319		2.92
9	9	LODE/CHERT		112.06	113.23	1.17	0.95	0.02	0.08	432	770		3.13
30	30	LODE		113.23	114.11	0.88	0.92	0.03	0.16	858	596		3.27
1	1	LODE		114.11	115.10	0.99	0.93	0.03	0.13	841	580		3.22
2	2	LODE		115.10	116.30	1.20	0.51	0.02	0.09	961	660		3.19
3	3	LODE		116.30	117.27	0.97	0.80	0.02	0.09	885	612		3.24
X	4	MIN'ED QTZ VEIN		117.27	117.81	0.64	1.21	0.04	1.14	433	300		3.26
			Σ	108.23	117.81	9.58	0.86	0.02	0.18				

N.W.P.S.

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HOLE No.: 1103 ADD

SAMPLE DATA

SHEET No.:

LENS	SAMPLE No.	ROCK TYPE	Σ	INTERVAL From	INTERVAL To	Length (L)	Assays (A) % Snt	% Sns	% Cu	Specific Gravity Dry	Wet		S.G.
	222723	LODE		0.00	1.13	1.13	1.34	0.03	0.43	846	576		3.13
	222724	LODE		19.95	20.28	0.33	0.12	0.01	0.22	381	256		3.05
	222725	LODE		108.23	109.20	0.97	1.10	0.01	0.10	751	513		3.16
	6	LODE		109.20	110.34	1.19	0.72	0.02	0.09	734	505		3.21
	7	LODE		110.34	111.27	0.88	1.37	0.02	0.16	813	553		3.13
	8	CHERT		111.27	112.06	0.79	0.16	0.01	0.06	485	319		2.92
	9	LODE/CHERT		112.06	113.23	1.17	0.95	0.02	0.08	1132	770		3.13
	30	LODE		113.23	114.11	0.88	0.92	0.03	0.16	858	596		3.27
	1	LODE		114.11	115.10	0.99	0.93	0.03	0.13	841	580		3.22
	2	LODE		115.10	116.30	1.20	0.51	0.02	0.09	961	660		3.19
	3	LODE		116.30	117.27	0.97	0.80	0.02	0.09	885	612		3.24
	4	MIN'ED ATZVEIN		117.27	117.81	0.64	1.21	0.04	1.14	433	300		3.26

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DIAMOND DRILL LOG

Hole No 1308 Page No 1

Feature: Bedding — Foliation — Fragment - size & shape — Shearing — Fault — Vein (c carbonate, q quartz)

Mineralization: Trace 1-5% — Common 5-15% — Abundant 15-60% — Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG / FEATURE	DEPTH m	MINERALIZATION
1.26	1.13	LODE – 20% sulphides in a predominantly qtz, carbonate host. The sulphides are vuggy and veiny – generally f.g.	Abundant		15% py, 3% cpy, 2% po, 45% carb, 30% qtz, 5% tour.
	1.56	CHERT – f.g. cream to tan chaotic chert. contact 45°			
2.39	2.32	SST. – massive, bleached to a tan colour m.g. poorly bedded sst. contact 45°			
	3.85	SHALE Fine grained massive shale, tan in colour with thin siderite filled micro fractures. Minor irregular chert clasts. Contact 45°			
1.04 0.63	5 5.55	CHERT (Minor shale) – f.g. pale grey to whitish grey massive and chaotic chert. Fine scale fractures common – Minor shaly bands – Bdg 43° – contact irregular			
1.16 1.34	8.05	SST – Medium grained slightly bleached rusty grey coloured sst – generally chaotic in nature with minor shaly partings. Rare shale clasts. Contact irregular.			
1.18	9.68	CHAOTIC SHALE – pale grey chaotic shale with irregular sideritic veinlets and patches and minor sst clasts. poorly bedded – contact 45°			
1.53 0.73 0.61 1.72 2.05 1.08 1.60 0.69 0.68	15 17.63	SANDSTONE (Minor shale). Predominantly medium grained pale grey to tan coloured sst, rare coarser grained sst. Irregular vuggy cavities are common. Thin siderite veinlets and carbonate segregations also occur. Minor shale interbeds 11.67-11.93, 14.60-14.95. Contact sharp. 50° to C.A.	F	11.50 14.95	healed fault 1cm wide, qtz, carb siderite filled. Bx zone 5cm wide, shale, sst, cpy. 45°
2.83	19.75	SHALE Fine grained grey shale, thin irregular laminations or foliations, chaotic in parts. Minor irreg. veinlets. contact 40°.	F(?)	19.88	Possible healed qtz, carb. fault 45°
	20.28	LODE – carb, qtz, tourm. 1% sulphides			patchy cpy 1% – tour 50%, carb 30% qtz 1?%
0.27		CHERT – f.g. chaotic to massive, tan to grey to black.			
0.63 1.79 0.28 0.63	23.20 25 26.75	SST – medium grained – bleached to a tan colour – erratic and chaotic in parts. From 25.15 – 26.75 the sst is composed of lithic fragments upto 1mm across. Contact 15° – sst becomes tourmalinized.			
0.33 0.63	28.35	BRECCIA – dark grey tourmalinized sst. fragments cemented in qtz, carb, some siderite.	Bx		Minor py
0.26 0.70 0.93 1.33 0.69 2.36 1.79	35 36.40	SANDSTONE: Tourmalinized lithic sst from 28.35 – 33.10 – fine fragments less 1mm. From 33.10 – 36.90 the sst is bleached tan colour with minor mid grey sst. Lesser shale interbeds 36.30 – 36.43. Contact not well defined.	Bx	31.10	10cm qtz, carb, sst. breccia 20°
0.89	37.60	SHALE – f.g. pale grey massive shale.			
1.84		SST / SHALE – m.g. sst with interbedded grey shale some sst clasts in shale. Contact 35°			
1.15 0.70 1.56	39.55 44.37	SHALE Fine grained grey, generally chaotic shale. irregular thin fractures and siderite filled veinlets. contact not well defined.			
0.97	45	SST – m.g. pale tan massive sst minor siderite veining	F(?)	45.00	Clay gouge zone 2cm wide FAULT

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DIAMOND DRILL LOG

Hole Nº 1308 Page Nº 2

Feature: Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein (c carbonate, q quartz)

Mineralization: Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
1.42	45.95	SHALE - massive fine grained grey shale, minor thin erratic siderite veinlets. Contact 60°							
	46.70	SST - m.g. massive tan sst. minor sid. veins							
	47.06	CLAY ZONE - grey clay? rounded qtz, fluorite, feldspar.							FAULT ZONE ? DYKE. (BASIC.
0.78 0.72 0.75 2.91		SHALE Disrupted f.g. shale - numerous thin veinlets, siderite filled and segregations randomly oriented. Tonal variation from pale grey to tan. Local development of fine carbonate spots. Contact not well defined.		F(?).				53.20	Fissured shale, fluorite qtz, carb breccia - FAULT - 2cm wide. 30° to C.A.
2.06	53.60 55 56.00	SST. Brecciated medium grained tan coloured sst. Abundant thin siderite filled fractures and veinlets. Contact not defined		F(?) BA				55.34	clay filled vein, open cavities c py FAULT ? 85° to C.A.
2.16 1.33	58.00	SHALE Fine grained generally massive poorly bedded tan coloured shale, becomes silicified towards base. Contact not well defined							56.00 - 57 silicified shale or cherty material carb, qtz, 10cm wide 30° to C.A.
2.36	60.43	CHERT - Massive to finely fractured tan to pale grey f.g. chert. Local tourmaline development? fractures are siderite filled. Contact 80°						58.65	vuggy f.g. clay, qtz, carb vein 20° to C.A.
	60.73	SST - grey tan. m.g. sst							
	61.30	CLAY ZONE - as previously described.							
1.80 1.30 0.60	65	SST. / SHALE - Interbedded m.g. brecciated tan coloured sst and f.g. pale tan coloured shales - Both have fractures and veinlets filled by siderite. Contact not defined.							
2.05 0.38 3.11	65.50 69.60	SANDSTONE Predominantly m.g. brecciated to a pale tan sst. Rare carbonate veining Contact 45° bounded by vuggy cl / carb, qtz vein		F				67.83	Healed qtz, carb, clay. FAULT 80° to C.A. 1cm wide.
1.87	71.55	SHALE Fine grained massive pale grey shale with common fine carbonate spots. locally shale is tan coloured. Contact 45°							
1.18	73.55	SST. Mid grey to tan grey medium grained massive sst c thin shale interbeds - contact 35°							
	74.78	SHALE - massive fine g. pale grey to tan shale. Minor fine carbonate spots. Contact 75°		F(?)				74.63	Sym healed FAULT ? - qtz, carb, f.g. py, Chl. 40°
3.02	75 76.41	SST - grey to off grey m.g. sst. contact not defined							
2.70 1.75 0.72 0.18 1.30 1.55 1.25 1.05 0.75 3.03	85 90.12	SHALE (Minor sst, ch) Predominantly fine grained grey shale massive, locally chaotic. Variation in colour from tan to rusty brown to grey. Fine carbonate spotting common. Sst. 76.92 - 76.31, 82.83 - 83.05, 93.52 - 83.17, 85.62 - 85.94. Chert 86.96 - 87.18. Pale grey f.g. massive shale 87.13 to 90.12 contact c sst. 60°						86.23	qtz vein c open cavities, sph.
	91.45	SST - Medium grained tan coloured sst minor thin carbonate veinlets. contact 87°							
1.90 3.19	95	SHALE (Minor sst / chert) Predominantly fine grained massive shale - tan to mid grey and dark brown in colour. Fine carbonate spotting common							

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DIAMOND DRILL LOG

Hole Nº 1308 Page Nº 3

Feature: Bedding · Foliation · Fragment - size & shape · Shearing · Fault · Vein (c carbonate, q quartz)

Mineralization: Trace 1-5% · Common 5-15% · Abundant 15-60% · Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
	97.47	Minor pinky chert clasts and interbedded sst. 94.05 - 94.35, 95.51 - 95.81 Contact. 70° to C.A							
		~~Sst massive mid grey med. g. sst~~							
3.10, 0.80, 1.67	97.87, 102.70	SHALE Initially dark brown siderite veined shale grading into tan coloured shale, generally massive poorly bedded. Fine carbonate spotting common. Contact irregular							
1.08, 1.50	104.80, 105	SST massive tan to mid grey medium grained sst. Slight local alteration to tourmaline, poorly bedded, sid. veined.							
1.17, 1.45	108.21	CHERT. (Minor Shale, cherty shale). Fine grained tan coloured chert, generally moderately well bedded 60°, occasionally chaotic - minor shale or cherty shale. Cherts become darker, tourmalinized towards base. Development of patchy sulphides. Contact sharp. 45° to C.A.						107.60	py, cpy, tour, qtz carb vein. Blebby py, cpy locally developed.
2.03	110	LODE 10% sulphides in a predominantly qtz, carb tourmaline host c minor fluorite. The sulphides are distributed as fine dissem. veins and stringers within the patchy carb, qtz tourmaline.			x				1% fluor, 9% py, 2% po, 1% cpy. 50% carb 30% tourm 9% qtz.
	110.16	CHERT - Mineralized, tourmalinized chert.			x				~~patchy py, minor carb, 2% sulphides~~
3.22	111.27	LODE 10% sulphides as irregular veiny segregations in a predom. carbonate - clay host - minor 20cm tourm/carb. Contacts sharp.			x			110.29	po, 8%, py 2%, cpy 1%, 75% carb 10% tour, 5% qtz.
	112.06	CHERT - tan to grey fine grained chert. minor sulphides in altered tour section.		x					1% py.
	112.22	LODE - As above.			x				
	112.42	CHERT - As above							
	112.99	LODE 10% sulphides in carb/clay minor qtz and tourm host.			x				Bygon of sulphides. 10 8%, py 1% - carb 80%, qtz 5% tourm 5%
	113.23	CHERT - siderite veined f.g. chert.							No visible sulphides.
3.02	115, 116.04	LODE 10% sulphides in carb, tourm, qtz, siderite lode - Variable in distribution of gangue. Initially tourm rich, then carb rich, grading into tourm rich and back to carb rich. In all cases both accessories present. Sulphides occur as irregular veins f.g. disseminations and patches. Faults of 114.06, 115.14 - 75° to C.A.	F, F		x				py - 8%, cpy 1%, sph 1%, po 1%. carb 45%, tourm 40%, qtz 5%
	116.30	CHERT - f.g. tan coloured chert.							No visible sulphides.
2.93	117.27	LODE 10% sulphides in a predominant carb. host, lesser qtz, tourm, fluorite - sulphides occur as ragged, veinlets, rounded blebs & patches			x				7% py, 2% po, 1% cpy. 85% carb, 3% qtz, 2% tourm.
	117.38	MIN'D VEIN. qtz, carb, fluorite mineralized vein. c 10% sulphides.							cpy, py, arsenopy (?).
0.82, 2.22, 3.05	120, 123.38	CHERT Generally massive to finely fractured. chert - variation in colour. Initially grey to off white then grading into tan colour - to pinky tan. Contact is gradational with true cherts grading into cherty shales then to shales. Locally cherts are well bedded. 40° to C.A.	Bx					119.12, 119.63	Sum qtz carb vein c py, siderite. 15° to C.A qtz, carb, chert breccia. 80°.
1.99, 1.07, 3.06	130	SHALE Fine grained moderately well bedded shale - sections are quite massive, others, very well bedded. - Bed'g uniform 50° to C.A. - Thin carbonate (siderite) veins sub parallel to bedding. Euhedral py common with chloritized	F(?)					126.55	Possible carb, qtz healed Fault 2cm wide 75° to C.A

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DIAMOND DRILL LOG

Hole No 1308 Page No 4

Feature: Bedding, Foliation, Fragment - size & shape, Shearing, Fault, Vein (c carbonate, q quartz)

Mineralization: Trace 1-5%, Common 5-15%, Abundant 15-60%, Massive <60%

CORE REC'D	DEPTH m	GEOLOGY	VISUAL LOG	TRACE	COMMON	ABUNDANT	MASSIVE	DEPTH m	MINERALIZATION
2.51	133.20	reaction rims. Fine carbonate spotting is common. Shales vary from pale grey to tan to pinky tan in colour.							
1.42 2.00 3.00	139.70	SANDSTONE Massive midgrey and tan poorly bedded sst. Fine fragments and feldspar phenocrysts are commonly observed. Minor patchy and veiny siderite alteration.						137.07 137.8? 139.05 139.20	carb vein c chpy py carb vein c chpy, po, dolomite, chpy, po in chl sph in chl, carb vein

E.O.H. 139.70

Logged 24/8/78.

A. Eadie.