

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge

HOLE No.: GB-137

Collar Eastings: 135.00

Collar Northings: 3775.00

Collar Elevation: 0.00

Grid: Main

Purpose: Test Southern Extension of Gullbridge mineralized horizon.

Collar Inclination: -60.00

Grid Bearing: 110.00

Final Depth: 520.60 metres

Logged by: S.Sears/M.H.Lenters

Date: July 18 to 27, 1990

Down-hole Survey: Tropari

			ASSAYS						
FROM	TO	LITHOLOGICAL DESCRIPTION ;	SAMPLE No.	FROM	TO	WIDE Cu (ppm)	Pb (ppm)	Zn (ppm)	Fe (ppm)
0.00	3.00	OVERBURDEN							
3.00	127.40	BRECCIATED RHYOLITE & QUARTZ-SERICITE SCHIST							
- the upper part (3.00 to 78.25 m) consists mostly mottled zones and bands of light to medium grey, buff, green-grey and pinkish/orange brown coloured variably schistose metavolcanic ranging from small (10 to 100 cm) zones of relatively massive to weakly shear foliated, pinkish brown feldspar phyrlic rhyolite to larger zones of weak to locally strongly shear foliated to locally banded quartz-plagioclase-sericite schist - the lower part (>78.25 m) is very similar to the rhyolite in GB-136 except this rhyolite is more brecciated and rubbly recovered									
3.00	78.25								
- mottled bands and large zones of light to medium grey, greenish grey tan coloured with some thin intense salmon pink colour adjacent to quartz veins - generally fine-grained, quartz-plagioclase-sericite schist, but with some thin (10-100 cm) definite plagioclase phyrlic rhyolite zones and remnant pods that are aphanitic, generally brownish and contain 1 to 3%, 1-3 mm, subhedral white to pinkish feldspar phenocrysts - unit is a variably shear foliated feldspar-phyric rhyolite - unit is hard, non-magnetic - contains 5 to 15% small (2 to 20 cm) somewhat planar but often crosscutting or anastomosing quartz veins; these are commonly oriented at 50 to 80° to CA although a few veins are more parallel to the CA - veins are white, somewhat diffusely banded and though planar have irregular vein edges that are not at all parallel. A few (10-50 cm) zones contain increased (15-50%) qtz veining forming crisscrossing stockwork vein sections; these sections often									

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 2

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WIDT	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)
		have a salmon pink colour due to alteration of small wallrock fragments within the qtz veins and thin (1-3 mm) zones of the adjacent wallrock - much of the unit also has abundant 5 to 25% thin (hairline to 2 mm) clear silica veinlets that form anastomosing braided zones across the rock - locally, qtz veining is offset by 1-10 mm across small fractures - shear banded foliation through unit varies somewhat but is mostly 0 to 40° to CA with average about 25 to 30° CA - unit has weak brecciated appearance with ± 3%, late, thin (hairline to 1 mm) tension fractures at various angles to CA. These have thin lime-green to yellowish epidote-sericite coatings - core relatively competent, generally with 20 to 50 cm breakage on fractures, but locally with thin (10-50 cm) robbly broken zones								
78.25	127.40	Brecciated Rhyolite - salmon pink to reddish brown to reddish purple with zones of light to med. grey rhyolite - v.f.g. to f.g. with locally 1-2% small (.1-1.0 mm) feldspar phenocrysts and local qtz phenocrysts - the lighter coloured sections are massive to locally weakly foliated and appear to be more grainy; this may be an effect of alteration enhancing the grain boundaries that are less visible in the darker red-purple sections; contacts between grey altered sections and other non-altered areas can be sharp and gradational or diffuse and gradational - the unit is very hard and siliceous with only the fs phenocryst being easily identified - non-magnetic throughout - the unit is generally massive overall with a moderate foliation within 1 m of the lower contact (0° to 30-45° CA) - this zone is gradational with the overlying unit and the foliation within the rhyolite is restricted to this zone - within the rhyolite there are local patches with a possible weak foliation 0° to 40° CA (i.e. ± 85.50 m) - the rhyolite is cut by many (2-3%) thin, planar, (1-5 mm) epidote ± qtz veins (the surface of which sometimes exhibit								

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 3

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)

(chloritoides) - these veins may or may not have a thin (1.2-2 cm) pinkish alteration zone around them. Zones of intense ep & quartz veining create a network fabric with fragments of unaltered rhyolite between the veinlets (eg. 93.65 m) giving the rock a strong brecciated appearance. Chlorite & garnet may be present in these veins

- 4-7%, pervasive, generally planar, qtz-veins up to 2 cm wide are present; these veins may also have a pinkish (k-spar?) alteration rim - the majority of the veins have no halo. Rare, thin (< 0.5 mm) calcite veins are also present cutting both the epidote-rich veins and qtz veins

- there are rare 0.1-2.0 mm veinlets of a dark unknown mineral (non-magnetic)

- no visible sulphides are present within the host rhyolite or within the pervasive veins which cut the host

- up to ~ 94 m the core is relatively competent with ~ 10% of the total being broken; from 94-118 m the core is ~ 50% broken and rubbly (the rubbly core is commonly restricted to the reddish brown to purplish rhyolite; the light green altered sections are more competent); the last 9-10 m is similar to that from 78.25m - ~ 94 m

- lower contact is sharp and possibly gradational into the underlying fragmented unit.

127.40 128.42 FERRUGINOUS CHERT FRAGMENTS IN RHYOLITE BRECCIA

- thin unit of irregular shaped massive to banded chert (BIF) fragments in a sheared rhyolitic matrix; the fragments are up to at least 5 cm in width (width of core) and probably much larger; the rhyolitic matrix is f.g. and greenish grey

- the BIF frags are purplish, ferruginous and weakly to strongly magnetic, whereas the matrix is non-magnetic

- epidote & garnet & qtz veins are present (4-7%) around some fragments and chlorite is common along the majority of the fractures

- foliation along the lower contact is @ ~ 60° CA with some BIF fragments parallelling this foliation

- no visible sulphides

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 4

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)
		- top half of unit is competent, whereas the lower half is broken and rubble - lower contact is sharp @ $\approx 70^\circ$ CA with the underlying brecciated rhyolite.								
128.42	128.73	BRECCIATED RHYOLITE								
		- very similar to reddish-brown section in above unit (i.e. from 78.25-127.40 m) but is somewhat more weathered with calcite and epidote network fracture veining weathered white - this unit is reddish-orange-brown with 1-3% fs phenocrysts in a v.f.g. to f.g. matrix - abundant epidote & calcite veining (10-15%); most veins are planar and at a high angle (60-80°) to CA - no visible sulphides - the unit is brecciated but competent - lower contact is sharp @ $\approx 60^\circ$ CA with underlying mafic unit.								
128.73	129.80	MIXED MAFIC & FELSIC METAVOLCANICS								
		- the top 20 cm and lower 60 cm are green to gray brecciated mafic metavolcanic rocks; the middle ≈ 27 cm is a purplish rhyolite - the whole unit is weakly to moderately foliated at $\approx 55-60^\circ$ CA except for the lower 20 cm which is strongly sheared at $\approx 40^\circ$; this zone contains felsic and mafic fragments in a zone flooded by Qtz + chlorite, calcite and epidote. The mafic sections are weak to strongly magnetic while the rhyolite is non- to weakly magnetic; the sheared portion is non-magnetic - no visible sulphides - epidote, Qtz, chlorite and calcite veins are present within the whole interval to a total of $\approx 10\%$ with calcite-rich veins marking the lower and upper contacts of the rhyolite within the mafics - the mafic sections and the lower sheared zone are more competent than the rubble rhyolite zone - the lower contact is sheared @ $\approx 40^\circ$ CA and is sharp with the underlying rhyolite.								

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 5

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)	Se (ppm)
129.80	133.85	WEAK-MODERATE SHEARED FELSIC METAVOLCANIC								
		- mottled, dark purplish grey to green grey, fine-grained, weakly to moderately sheared felsic rock - sheared @ = 45-58° CA; the more intensely sheared areas contain numerous thin (0.5-1 cm) qtz veins (i.e. 131.85 m) - in areas of less shear, the rocks appear to be more brecciated than foliated (i.e. 131 m) - 1-2% qtz veins throughout; many are contorted and folded (i.e. @ = 130.40 m) and have thin (up to 1 cm) k-spar alteration haloes around them (these "qtz" veins may possibly be qtz-rich bands within the rhyolite contorted due to flowage - i.e. flow banding) - epidote veining (± 0.5-1 mm) also occurs with the veins ± 0.5-1 mm in width - the rock is hard and is weakly chloritized and sericitized - no visible sulphides - the rock is competent with only 1 zone of rubbly core (± 5-7 cm wide) - the lower contact is sharp @ = 55-60° CA.								
133.85	184.40	MASSIVE MAFIC METAVOLCANIC (Feeder Dyke?)								
		- med. to dark greyish green to green, fine- to coarse-grained dioritic intrusive - the top 10-12 m is relatively fine-grained whereas the interior is medium to coarse-grained (locally coarse amphibole porphyroblastic appearance) - the lower section is also fine-grained as it nears the lower contact with the cherty unit. Although unit does not have the sharp chilled margins of the late diabase dykes, the core is coarser and the edges generally finer-grained. - the coarser-grained sections contain crystals of amphibole (after pyroxene?) and plagioclase with possible rare crystals of quartz - crystal size ranges from ± 0.1 mm in the f.g. sections up to 0.2-0.3 cm in the c.g. sections - the unit is non to weakly magnetic with small blebs of magnetite causing local increases in the magnetism								

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 6

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)
		- overall the unit is massive and hard - partial chloritization of the amphiboles and saussuritization or sericitization of the fs crystal is evident in the c.g. section - the unit as a whole has been possibly weakly silicified and slightly chloritized - irregular, planar calcite & qtz veins (commonly at a high angle to CA (±60-80°)), comprise 1-2% of the rock and are up to 2-3 cm in width; some veins, i.e. 152.45 m, are sheared? or exhibit crack-seal texture; a few thin, 0.1-2 mm wide veinlets of a black unknown mineral (probably amphibole) - traces of pyrite and associated magnetite are found as small (up to 5 mm) patches - the core is very competent with only a few rubbly sections over 10-20 cm - at 181.70 there is an irregular 2-3 cm wide f.g. diabase dyke with v.f.g. chill margins - the dyke is magnetic and cuts the diorite @ ± 25-30° CA - the lower contact with the chert is sharp @ ± 10-15° CA								
184.40	185.95	INTERBEDDED "CHERT" AND FELSIC TUFF								
		- cherty layers (184.40-184.72 m, 185.00-185.29 m, 185.36-185.95 m) are mainly med to dark greenish grey with lesser amounts of reddish to reddish green chert; the chert is well laminated with layers up to ± 1 cm in width @ ± 55-65° CA (avg. 60° CA); the laminations are sometimes offset by small scale fault (offset in range of few mm) - the cherts are magnetic with the reddish sections being more magnetic than the greenish-grey section - there is a weak pervasive chloritic alteration within the green sections; sericite is also visible along some fractures - epidote (& garnet) veinlets are common (1-2%) within the chert and cut both along and across the lamination; qtz veins (4-7%) are irregular in shape and are concentrated in local "flood zones" (i.e. 184.70 m) - no visible sulphides within the cherty units								

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 7

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WIDE	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)

- the tuff (qtz-chlorite-sericite schist) layers (184.72-185.08 m, 185.29-185.36 m) are med to dark green-grey in colour, fine-grained with possible qtz fragments or distended qtz veins; the tuff is massive to laminated @ = 50° CA
- non to weakly magnetic

- the rocks are schistose subparallel to bedding with the schistosity defined by sericite and chlorite; there is a possible crenulation developed (i.e. 185.29-185.36 m)

- alteration consists mainly of a med to strong pervasive sericitic and chloritic alteration; epidote veining is limited to the contacts with the surrounding cherty layers
- no visible sulphides

- core is competent with little breakage

- lower contact is sharp at = 70° CA with the underlying diorite dyke.

185.05 195.40 MASSIVE MAFIC METAVOLCANIC (FEEDER DYKE?)

- medium to dark greyish green, fine to medium-grained (fine-grained near upper and lower contacts, med.-grained near the centre), massive to locally foliated @ 50° CA
- relict amphibole crystals are visible along with altered, aligned plagioclase crystals (@ = 50° CA) near the centre of the dyke
- overall, it is composed of plagioclase, amphibole and possibly few f.g. quartz crystals

- the unit is relatively soft and is generally non-magnetic with local magnetism near the contacts

- the foliation within the dyke is defined by a mineral stretching (plagioclase) @ = 50° CA - this is visible near the medium-grained centre of the dyke

- the plagioclase has been partially sericitized and/or saussuritized and the amphiboles are slightly chloritized; there also appears to be a weak pervasive epidote alteration; (slight silicification near the lower contact over 10-15 cm)

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 8

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS			
						Wt% Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)

- epidote, calcite ± garnet, ± qtz veins, patches and veinlets (irregular to planar) comprise up to 2-3% of the rock volume; the veins are up to 3-4 cm across but generally ± 1 cm
- there is also 1-2% thin (1-3 mm) veinlets of amphibole? ± chlorite
- there are no visible sulphides
- the core is competent with only a few sections of rubble core over ± 20 cm

- the lower contact with chert is sharp & ± 15-30° CA, the dyke is slightly silicified near this contact zone

195.40 199.65 RED FERROGINOUS CHERT AND PELTIC TUFF

- the chert layers (195.40-196.47 m, 197.56-198.06 m, 198.42-198.99 m) are brownish to orange - red in colour with thin (1 mm-2 cm) continuous to discontinuous laminae; also a few zones of greyish chert within the reddish parts. Some reddish chert areas also have alternating white, exclusively silica bands with the layering ranging from 30-45° CA with ± 40° CA average

- the upper and middle chert layers are moderately magnetic whereas the lower layer is non-magnetic

- the top 2 chert layers display relatively consistent layering with only minor mm scale offsets; the lower section of the lowest chert appears highly sheared and distended with possible over-growth by pink to brownish garnets; this zone is in contact with an underlying tuffaceous unit - along this contact is a 4 cm wide breccia zone of chert and lesser qtz fragments in an epidote-rich matrix

- there is 1-2% thin (0.5-2 mm) epidote-veining and 1-3% qtz ± calcite veining - most veins are planar and at highly variable angles to CA
- cherts are well fractured with minor (1-10 mm) offsets on thin tension gash fractures filled by veining as above

- no visible sulphides in the cherts

- the tuff layers (196.47-197.56 m, 198.06-198.42 m) are red to

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
 HOLE No.: GB-137

Page 9

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS			
						WIDITH	Cu (ppm)	Pb (ppm)	Zn (ppm)

dark grey in colour, fine to med.-grained, and layered - the layering is highly contorted in places (i.e. possible kink structures) but where it is most consistent, it is $\approx 40^\circ$ CA - the lower tuff contains a few thin cherty bands and some red chert fragments

- the rock is felsic in composition, yet it is soft in places due to the effects of alteration

- the tuff have been altered slightly to sericite and chlorite, best seen along broken surfaces

- unlike within the cherty layers, epidote veins are rare, cutting the tuff units, yet there is 3-5% quartz veining which generally parallels the layering

- no visible sulphides within the tuffs

- the core is competent, but there is 10-15% breakage overall

- lower contact with brecciated unit is sharp @ $\approx 35^\circ$ CA and is partially obscured by qtz-flooding.

199.65 204.22 BRECCIATED & FAULTED FELSIC METAVOLCANICS (Chloritic)

- med to dark green-grey, fine- to med-grained, generally layered - the layering is quite variable and contorted with large 1-20 mm, irregular angular broken fragments in a fine chloritic matrix, but where it is less contorted, the angle to CA ranges from $\approx 40-60^\circ$

- the rock is composed dominantly of quartz, sericite and lesser chlorite; a mafic section from 202.31-202.81 m may be a mafic interval within the felsic unit or it may be a more chloritized felsic section (probably a mafic section within the overall felsic unit) - red chert fragments in the lower 60 cm

- there are possibly a few unaltered feldspar crystals visible

- the unit is predominantly non-magnetic except for 2 magnetite-rich locations within the upper 40 cm of the interval

- this unit is structurally complicated, containing kink structures, contorted layering, and a sheared and brecciated lower zone which contains red chert fragments (may have once possibly been thin chert bands)

- alteration appears to be restricted to sericitization and

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 10

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS					
						WIDE	Cu (ppm)	Pb (ppm)	In (ppm)	Ba (ppm)	
		chloritization - epidote veining is not prominent except for the first 60 cm of the interval which contains .1-5.0 cm wide epidote + calcite and garnet veins - magnetite is apparently associated with these veins - 2-3% qtz veining and 1-3% calcite veining - irregular in shape - most veins are @ a high angle to CA - core recovery is good with only a few thin (5-10 cm) rubble zones - lower contact is sharp @ 50° CA - foliation in underlying felsic tuff parallels orientation of upper contact.									
204.22	216.77	INTERLAYERED FELSIC ASH AND LAPILLI TUFFS (Generally strongly chloritized and locally strong cordierite development)	200222	214.58	216.58	2.00	8	TRACE	66	750	
			200223	216.58	218.58	2.00	488	20	560	114	
			200224	218.58	220.58	2.00	449	4	92	680	
204.22	210.78	Fine-grained Lithic-crystal Lapilli Tuff	200225	220.58	222.58	2.00	580	TRACE	30	1120	
		- medium to dark grey-green, fine to medium-grained - minor fragments up to 5-6 mm in diameter, in generally a homogeneous fine tuff matrix, weakly to moderately planar foliated @ 35-45° CA with the strongest foliation is confined to the finer-grained upper portion of this interval	200226	222.58	224.65	2.07	723	TRACE	32	520	
		- fragments consisted of blue quartz eyes and brown feldspar crystals and some elongate lithic fragments (dark, f.g. hard fragments and rare red chert fragments), the crystals are the dominant fragments and all fragments are set in a light to med. grey ash matrix	200227	227.38	228.38	1.00	1450	TRACE	80	270	
			200228	228.38	229.38	1.00	791	60	110	130	
			200229	229.38	230.38	1.00	167	20	56	1000	
			200230	234.09	235.09	1.00	67	16	100	120	
			200231	241.62	242.62	1.00	19	TRACE	32	260	
			200232	247.80	249.80	2.00	143	TRACE	102	250	
			200233	249.80	251.80	2.00	309	TRACE	74	440	
			200234	251.80	253.79	1.99	67	TRACE	72	860	
			200235	253.29	253.59	0.30	1780	TRACE	122	140	
			200236	253.59	255.59	2.00	574	TRACE	82	470	
			200237	255.59	257.59	2.00	723	4	82	310	
		- the section is slightly altered to chlorite and sericite with sericite dominating the finer-grained upper section; the lower section is darker green in colour and is dominated by chlorite alteration	200238	257.59	259.59	2.00	273	TRACE	94	350	
			200239	262.35	263.35	1.00	79	4	50	790	
			200240	263.35	265.35	2.00	135	4	82	130	
			200241	265.35	266.77	1.42	18	TRACE	102	170	
		- < 0.5% planar quartz veins which both cut and parallel the fabric - few thin (1-2 mm) epidote veinlets - the unit is generally non-magnetic with a thin magnetic zone @ 206.25 m (+ 20 cm wide); there are a few magnetite filled fractures near the lower boundary - possibly 1-2% disseminated, v.f.g. pyrite - gradational lower contact over 5-10 cm									

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge

HOLE No.: GB-137

Page 11

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FECK	TO	ASSAYS				
						WIDT	Cu (ppm)	Pb (ppm)	Zn (ppm)	Bi (ppm)
		216.78 230.71 Cordierite Bearing Chlorite Ash Tuff - med. to dark greenish grey with local buff colored areas; fine ash to fine lapilli grain size; there is contorted (i.e. sheared/faulted/irregularly tightly folded) bedding in the upper 4 metres; has a well developed foliation; in the less well developed foliated areas, the banding is similar to that within the overlying lapilli tuff - highly irregular and contorted; locally well crenulated schistosity. The upper section (above 212.15 m) contains thin (1-6 cm) intervals of magnetic red chert which parallels the bedding - the rock is an assemblage of f.g. qtz, cordierite, sericite, feldspar, and chlorite - the cordierite (overall = 15-20% but variable) and sericite are most prominent in areas where the schistosity is the best developed; the cordierite crystals are up to 2-3 cm in diameter but overall average 0.5-1 cm in diameter; cordierite becomes less abundant in the lower 2-3 metres; upper part contains locally 30-40% large cordierite spots (calcination rock) - the schistosity is generally planar but occasionally folded; in more consistent sections, the fabric is generally at a high angle to CA but can range from 50-80° CA - rock is moderately chloritized with abundant chlorite present as fine matrix material and occurring on slip surfaces - 212.02-212.15 m - red chert band at ~ 60° CA; cordierite does not occur above this chert, but is abundant directly below - along with the cordierite and sericite alteration is a moderate pervasive chloritic alteration - 2-3% qtz veining - generally irregular in shape and 1 cm in width - generally non-to weakly magnetic with local strongly magnetic chlorite-rich bands - pyrite and pyrrhotite constitute 3-5% of the rock volume occurring as disseminations, fracture fillings paralleling schistosity, and a thin semi-massive pods of euhedral crystals (i.e. 217.75 m) - possible trace cpy associated with po in some areas - pyrite abundance appears to be related to the intensity of the chlorite alteration; increase in pyrite with an increase in chlorite								

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 12

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	WIDTH	ASSAYS				
							Cu (ppm)	Pb (ppm)	Sn (ppm)	Ba (ppm)	
		- the lower section of this interval contains thin (1-3 mm) layers of pyrite and heavily disseminated (10-13%) po in a strongly chloritic tuff - the lower contact with the underlying crystal tuff is abrupt but gradational over 10-15 cm									
238.71	244.70	Quartz-feldspar (fine lithic) Crystal Tuff - mottled dark grey to greenish grey, med. grained, weakly to moderately foliated - 5-18% dark, f.g. lithic fragments; 20-30% crystal fragments composed dominantly of blue qtz "eyes" and lesser whitish feldspar crystals - the crystals are rounded to subrounded and the lithic fragments tend to be more elongate parallel to the foliation - the foliation of the rock ranges from 35-55° CA but avg = 45° CA - it appears to be a shear cleavage parallel to bedding; a thin 1 cm wide fault gouge occurs 2 cm below the upper contact; the gouge consists of host rock fragments in a very soft clay matrix - the unit is non-magnetic - moderate pervasive chloritic and sericitic alteration - very few < 0.5% planar qtz veins generally at a high angle to CA - possibly 1-3% disseminated f.g. py throughout - lower contact with tuff is gradational over 5-10 cm									
244.70	266.77	Pelagic Ash Tuff - dark grey to dark greenish grey with lighter buff patches, fine-grained, contains highly contorted layering which ranges from parallel to CA to = 70-75° CA; a weak avg would be = 40° CA; possible fault gouge (over = 25 cm) @ = 256.80 m and there is a 1.5 cm fault gouge @ 262.54 m; few thin buff coloured bands (up to 5-6 cm wide) are v.f.g. siliceous ash units/or chert - the overall rock is an assemblage of f.g. qtz., fs, ac, chl and cordierite - the minerals are f.g. except for cordierite which overprints other minerals and can be up to 1-2 cm in diameter - there also may be some cordierite retrograded to chlorite (i.e. 260.60 m) - they are up to 1 cm in width with a greenish core and a dark mantle									

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 13

FROM

70

LITHOLOGICAL DESCRIPTION

SAMPLE No.

FROM

TO

WIDTH

Cu (ppm)

Pb (ppm)

Sn (ppm)

Ba (ppm)

ASSAYS

- unit is non- to weakly magnetic but there are thin veinlets of magnetite which creates a local strong magnetism
- po also enhances the local magnetism
- overall there is pervasive weak to moderate chloritic and sericitic alteration
- very little (1-2%) qtz veining
- pyrite and pyrrhotite = 3-5% but locally in concentrations of 20-30% over 10-50 cm; occur as disseminations and thin veinlets parallel to and cutting the local layering; sulphide concentrations seem to increase where there is increased chlorite
- overall core recovery is good with only few sections of bubbly zones (10-20 cm in width)

266.77	313.50	INTENSELY CHLORITIZED (Fe altered) FINE FELSIC METAVOLCANIC TUFFS (locally have mafic character)	200242	269.27	271.27	2.00	TRACE	TRACE	58	180
			200243	271.27	272.49	1.22	22	12	78	100
			200244	272.49	273.49	1.00	TRACE	TRACE	44	110
		- probably originally a fine felsic tuff but now intensely Fe altered (chlorite, minor-moderate magnetite) with only relict siliceous appearance	200245	301.75	303.25	1.50	TRACE	TRACE	36	20
		- med to dark green to greyish green, fine-grained, relatively homogeneous, generally weakly foliated to brecciated, but locally moderately foliated (i.e. 0 = 281 m at = 40-45' CA)	200246	306.12	306.75	0.63	3	TRACE	24	10
		- the rock is a f.g. assemblage of chlorite, sericite, and saussuritized or sericitized plagioclase, where the grain-size is visible (i.e. 269.50 m); fine disseminated and locally thin magnetite bands								
		- cordierite overgrowths occur sporadically in clusters of crystal aggregates - they are up to 1 cm in width and average 0.5 cm								
		- the unit is more magnetic (moderately magnetic) within the upper 5-6 m with local areas of up to 5-10% f.g. disseminated magnetite - the middle section to = 292 m, overall, is less magnetic, but is still weakly to moderately magnetic - there are a few magnetite-rich bands within this interval. The lower section to end of unit is moderate to strongly magnetic								

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 14

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						Wt% Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)	
		due to increase in overall magnetite as dissems and 3-5 cm wide irregular veins - thin (1.5 cm) chloritic fault gouge @ 279.88 m - it is carbonate-rich and very chloritic - from + 271.58-273 m is a fault zone - irregular breccia pieces in sheared chloritic matrix @ 25 to 30° CA; breccia is pyritic and contains a magnetite layer @ 272.58 m - this faulted zone is structurally overlain by a mafic containing disseminated magnetite and is underlain immediately by competent, mafic-altered felsic volcanics containing some magnetite bands; at + 385.50 is a 40 cm wide chloritic fault zone - overall, there is a strong pervasive chlorite alteration which is seen on most fracture surfaces; there is also a weak pervasive epidote + silica alteration; light grey, usually weakly foliated zones are slightly silicified; the latter appear to be relict felsic metavolcanics; zones/patches locally opaque opaline coloured elongate (1-3 mm) grains of soft soapstone material - very few epidote or quartz veins - sulphides are ≤ 0.5% overall but are locally concentrated up to 10-15% (i.e. fault zone at + 272 m), py > po, magnetite is sporadic occurring as dissems and as thin (2-5 mm) irregular stringers in the middle section of the unit, whereas in the final + 20 m overall magnetite + 2-5% with local concentrations of 15-20% over + 60 cm (i.e. + 386.45 m) - the magnetite-rich areas are found in lighter coloured grey areas, partially silicified, with few garnet crystals - the core is very competent with rubbly core occurring mainly around faulted zones - lower contact with diorite is sharp with a 10-15 cm wide epidote-rich fault zone.								
113.50	434.30	PORPHYRITIC DIORITE (INTERMEDIATE) INTRUSIVE	200247	320.26	321.26	1.00	TRACE	TRACE	56	40
		- med. to dark green to dark greyish-green, fine-grained with fs phenocrysts; mostly massive with several 10-50 cm interval of brecciation; fs phenocrysts are sometimes oscillatory zoned - f.g. sections may be chill margins indicating that this unit	200248	413.61	414.61	1.00	79	TRACE	68	80

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 15

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS			
						Wt%	Cu (ppm)	Pb (ppm)	Zn (ppm)
		is a series of intrusive bodies (these f.g. sections have n.g. interiors) - overall 5-10% f.g. phenocrysts with local concentrations of 20-25% over 0.5-1 m intervals; phenos set in a f.g., hard, dark matrix - the phenocrysts range from 0.1-1.5 cm, are light pink to white to light green in colour and are mainly subhedral to euhedral - the rock is non- to weakly magnetic with areas of intense magnetism due to high concentrations of magnetite or to a lesser extent po - patches of generally non- to weakly porphyritic zones near upper contact may be partially assimilated wallrock pieces of overlying unit. Thick irregular magnetite band at 321.26-321.35 metres - alteration is a weak chloritic alteration with patchy epidote & garnet and calcite being the strongest; rare sporadic cordierite crystals, the last 3-4 m is highly brecciated with abundant (20-25%) ep, calcite, & chlorite veins - the rock is hard and siliceous which may either be primary silica (i.e. it is an intermediate to possibly dacitic rock) or it may be a result of silicification - chloritic alteration appears strongest in areas where phenocrysts are concentrated and the phenocrysts themselves appear to be saussuritized or sericitized - irregular epidote, calcite, & garnet patches up to 5-10 cm wide comprise ~ 5-15% of the rock volume, but there is much less pervasive epidote alteration (i.e. away from the veins the effects of alteration are minimal) - no visible foliation to the rock and the phenocrysts appear randomly oriented - ep-rich fault zone over ~ 10-15 cm at the upper contact; ~ 25 cm of rubby core @ 334.90 which may be indicative of a possible fault. - sulphides (py & po) ~ 0.5% but there is a local concentration of po at ~ 321.50 m in a thin vein (2-4 mm wide) also @ 414.35 m (4 cm massive po & py)							

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 16

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS					
						Wt%	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)	
		- magnetite is < 0.5% overall and sporadically occurs along fractures - core is very competent with only few 5-10 cm wide rubble zones - lower contact is gradational over ~ 50 cm with no clear cut contact - unit is probably a larger feeder dyke zone to mafic meta-volcanics. Roberts Arm Group Feeder Dyke/Subvolcanic Intrusive Dyke.									
		398.23 404.27 Porphyritic Dacitic Dyke - med to dark grey, f.g. chilled margins and m.g. centre, massive - is more felsic than host rock and appears similar to the host lithology but this rock is lighter in colour, moderately magnetic, relatively homogeneous, and overall has more abundant, yet smaller plagioclase phenocrysts - ~ 25-30% plag phenocrysts up to 5 mm in length - ~ 50-60 cm wide chill margins at both contacts - phenocrysts set in f.g. grey, hard matrix - phenocrysts are altered to an aggregate of saussurite or sericite and chlorite; matrix appears relatively unaltered - very few veins and no visible sulphides - weak to moderately magnetic - overall it is more magnetic than the host lithology - both contacts at ~ 50° CA.									
434.30	520.60	MAFIC METAVOLCANICS (Pillow Basalt & Pillow Breccia & Hyaloclastite)	200249	516.00	518.00	2.00	42	TRACE	104	30	
			200250	518.00	520.60	2.60	81	TRACE	106	30	
		- dark grey to dark greyish-green, fine-grained with patches of fine to med-grained material, massive with several 20-70 cm sections of brecciated rock - possibly interpillow breccias - possible pillow fragments throughout with good example at 493 m - med-grained section display amphibole (or pyx) and plagioclase crystals 1-2 mm in width - the unit is non to weakly magnetic overall with the first 6 metres being moderately magnetic - unit is hornfelsed									

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 17

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)
		- at 484.63m is a 20 cm wide chloritic, siliceous, and calcitic fault zone; at 503 m is a 10 cm wide fault gouge with fol @ $\approx 45^\circ$ CA - 1-2% epidote + garnet, calcite veining and 2-3% qtz-veining especially near or within siliceous zones - up to 5 cm wide but usually < 1 cm, the epidote veins are irregular and cut the CA at a wide range of angles (parallel to $\approx 70^\circ$ CA) - qtz veins are also irregular and generally cut CA at $> 45^\circ$ CA; the qtz veins are up to 2-3 cm wide - $\approx 1\%$ irregular calcite veins up to 1 cm in width - py & po < 0.5% to trace amounts locally occurring in small patches, and along chloritic fractures, sporadic f.g. magnetite < 0.5% - core is competent but has several 10-80 cm wide rubbly zones - lower contact not encountered 439.40 441.78 Siliceous Interflow Sed. Intervals - f.g., med. grey, chloritized felsic crystal tuff (cherty) - containing minor cordierite porphyroblasts 450.25 452.50 F.g. siliceous interflow, tuff or greywacke, med to dark grey, 2-3% qtz veins, no visible sulphides; lower 1 m appears more brecciated than top 65 cm; qtz-veined lower contact 482.55 486.88 Chert to f.g. tuff, med to dark grey, siliceous; top 1 m has mafic intervals (50 cm and 25 cm wide), brecciated in sections; no visible sulphides; lower contact sharp with mafic rock. 520.60 - BGR CASING LEFT IN HOLE								

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-137

Page 18

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WICHT	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)

DOWN-ROLE SURVEY DATA

DEPTH	INCLINATION	BEARING
61.26	-58.00	120.00
126.80	-57.00	116.50
256.34	-53.00	130.00
384.25	-51.00	138.50
511.59	-53.00	140.00
520.60	-53.00	140.00

PROJECT: ROBERTS ARM - GULLBRIDGE

RAE

PAGE 1 of 2HOLE NO. GB - 137

SAMPLE NUMBER	SAMPLE INTERVAL (M)			ASSAYS				Sulphides	SAMPLE DESCRIPTION
	FROM	TO	LENGTH	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)	(%)	
200,222	214.58	216.58	2.00	8	<2	66	750	1-2% Py	-cordierite spotted felsic metavolcanic ash tuff
200,223	216.58	218.58	2.00	488	20	560	110	2-3% Py	-cordierite spotted felsic metavolcanic ash tuff
200,224	218.58	220.58	2.00	449	4	92	600	<1% Py	-felsic metavolcanic ash tuff
200,225	220.58	222.58	2.00	580	<2	30	1120	<1% Py <1% Pb Trace Cp	-felsic metavolcanic ash tuff with cordierite
200,226	222.58	224.65	2.07	723	<2	32	520	3-5% Py	-sheared felsic metavolcanic sheared tuff with cordierite
200,227	227.38	228.38	1.00	1450	<2	88	270	3-5% Pb	-chloritic tuff
200,228	228.38	229.38	1.00	791	60	118	130	5-7% Py <1% Pb	-felsic metavolcanic tuff with pyrite bands
200,229	229.38	230.38	1.00	167	20	56	1080	1-3% Py	-felsic metavolcanic ash tuff
200,230	234.04	235.04	1.00	67	16	100	120	<1% Py <1% Pb	-felsic metavolcanic lithic-crystal tuff
200,231	241.62	242.62	1.00	19	<2	32	260	<1% Py	-felsic metavolcanic lithic-crystal tuff
200,232	247.80	249.80	2.00	143	<2	102	250	1-2% Py	-felsic metavolcanic ash tuff
200,233	249.80	251.80	2.00	309	<2	74	440	3-5% Py	-cordierite spotted felsic metavolcanic ash tuff
200,234	251.80	253.29	1.49	67	<2	72	860	1% Py	-cordierite spotted felsic metavolcanic ash tuff
200,235	253.29	253.59	0.30	1780	<2	122	140	10-15% Py 5-10% Pb	-Fe altered (chloritic, pyritic, pyrrhotitic) tuff
200,236	253.59	255.59	2.00	574	<2	82	470	3-7% Py 3-5% Pb	-felsic metavolcanic ash tuff with trace magnetite
200,237	255.59	257.59	2.00	723	4	82	130	1-2% Py	-felsic metavolcanic ash tuff
200,238	257.59	259.59	2.00	273	<2	44	350	<1% Py	-felsic metavolcanic ash tuff with cordierite
200,239	262.35	263.35	1.00	79	4	50	790	1-2% Py	-felsic metavolcanic ash tuff with cordierite

Sampled by S Sears

RAE

PAGE 2 of 2
HOLE NO. GB-137

[illegible]