

RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: GULLBRIDGE

HOLE No.: GB-144

Collar Eastings: 500.00

Collar Northings: 5650.00

Collar Elevation: 0.00

Collar Inclination: -60.00

Grid Bearing: 85.00

Final Depth: 385.27 metres

Logged by: S.M.Pudifin

Date: Feb.2,1991

Down-hole Survey: Tropari

FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS			
						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)
0.00	18.59	CASING (Ice, Water, Overburden)							
18.59	72.81	FLOW BANDED (SHEAR FOLIATED) RHYOLITE WITH MASSIVE-BRECCIATED RHYOLITE							
		18.59-29.20 m: Flow Banded/Shear Foliated Rhyolite							
		- medium-light grey, showing thin banding which is generally parallel to weak foliation.							
		- generally fine-grained to aphanitic.							
		- core is hard, siliceous with minor to moderate sericite and minor chlorite, minor localized quartz-feldspar? phenocrysts, 1-2 mm.							
		- weak to moderate shearing varies between crenulated rock towards top of interval @ 30-60° CA; average is 40° CA; broken rubble zones 18.59-19.81 m and from 22.86-22.96 m.							
		- late 1-2% hairline fractures coated with epidote-quartz+red hematite both parallel and crosscutting the foliation @ 30° CA.							
		29.20-35.75 m: Brecciated Massive Rhyolite							
		- rock appears to be more massive than upper interval and of similar composition but crosscut by numerous veins and fractures; white to greyish-white quartz veins are anastomosing but largest (> 0.7 cm) tends to be subparallel to CA; latest thin, (2 mm wide quartz-epidote + sericite/clay veins/veinlets crosscut everything; chlorite sometimes rim quartz but also occurs as separate veins with or without sericite (they are occasionally offset by quartz; minor calcite observed along fractures.							
		- no visible sulphides.							
		- core is non-magnetic.							
		- gradational lower contact defined by appearance of cordierite spots.							
		35.75-47.25 m: Altered (Porphyroblastic) "Spotted" Shear Foliated/Flow-Banded Rhyolite							
		- medium grey with mottled, spotted appearance due to variable amounts of cordierite.							
		- generally fine-grained, siliceous, sericitic.							
		35.75-38.80 m - 5% cordierite (1-2 mm in diameter); dark greenish grey with distinct ragged outlines.							
		38.80-42.20 m - ~ 15% cordierite: 3-7 mm; the cores are							

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						WIDEN	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)
		generally light grey-green rimmed by darker greenish-grey chlorite?								
		42.20-42.52 m: Fault zone - gouge with sericite-quartz-chlorite/clay & carbonate @ 48° CA; local pinkish-salmon coloured alteration associated with this fault zone.								
		42.52-44.25 m: Core is more competent (Massive) hosting 1-2% cordierite; minor irregular white-creamy quartz veins crosscut foliation.								
		44.25-46.00 m: ~ 10% cordierite which coarsens up to 1.5-2.0 cm diameter; spots altered red due to hematization.								
		46.00-47.25 m: Gradational disappearance of cordierite spots; core is more massive. - the weak banding of this altered unit varies between 30-60° CA; average is @ 55° CA. - broken core @ 40.50-41.15 m. - 2% veins; generally whitish plagioclase quartz veins (1 cm wide; sericite & chlorite coated fractures are common. - trace very fine-grained speck py; one speck cp noted @ 38.00 m. - core is non-magnetic.								
		47.25-49.00 m: Brecciated Massive Rhyolite - similar to 29.20-35.75 m, but slightly less quartz veins; quartz veins are generally ~ 2-3 mm wide, are irregular, but tend to occur between 60-75° CA; salmon-coloured patches common especially adjacent to sericite & epidote fractures/veinlets.								
		49.00-59.44 m: Weakly Flow-Banded Rhyolite - fine-grained generally competent with banding generally @ 50° CA. - sericitic, minor thin quartz-epidote fractures.								
		59.44-63.65 m: Massive Rhyolite - sericitized, localized presence of fine-grained quartz or feldspar phenocrysts (1-2 mm); up to 2% of core, locally; trace fine-grained black specks which could be magnetite? but not magnetic.								
		63.65-72.81 m: Strong Flow-Banded Rhyolite								

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)
		- silicification is stronger with 4-5% irregular quartz veins; some are pygmatically folded 1 cm wide tending to parallel CA. - banding is very distinct ranging between 30-40° CA; average @ 35° CA; bands are light to medium grey and whitish-light grey. 71.30-71.53 m: Fault Zone - gouge filled @ 45-50° CA. - trace fine-grained py locally; i.e. @ 72.00 m, one observes minor py coated along fracture surface. - unit is non-magnetic. - lower contact is brecciated over 25 cm with irregular chloritic fractures; sharp undulating intrusive contact with lower unit.								
72.81	78.72	MAFIC DYKE/VOLCANIC - dark greenish-grey. - fine-grained; massive; no real chill margin observed. - chloritic with (2-3% quartz and quartz-calcite as well as epidote-calcite fractures and stringers. - no sulphides noted. - non-magnetic. - core is generally competent. - sharp irregular lower contact. 78.33-78.45 m: Sharp contacts @ 38° CA; patchy diffuse silicification associated with brecciation 78.33-78.45 m, epidote also present with quartz.								
78.72	94.35	FINE-GRAINED INTERMEDIATE-PLSIC INTRUSIVE PORPHYRY (Note: This unit may be a sediment, i.e. greywacke/crystal tuff, but due to lack of bedding or structure, I've left it intrusive. However, evidence in favour of sediment: possible fine-grained cherty fragments; localized porphyroblasts; ragged broken nature of feldspar and quartz crystals; poorly sorted.) - medium grey with some reddish-pink alteration toward centre of interval. - fine-grained to coarse-grained towards lower end of interval where crystals/phenos are 1-2 mm and unit seems to be less altered.								

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS			
						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)
		- upper part of unit is strongly fractured from 78.72-81.55 m: here an anastomosing network of quartz veins is present occasionally with epidote; veins * 2-3 mm tend to be subparallel to CA; silicification patches also present; minor to moderate chlorite.							
		79.75-80.20 m: Fault Zone - broken core with gouge whitish quartz & clay subparallel to CA; core is rubbly. - remainder of interval is generally competent; core is sericitic and variably siliceous with localized chlorite zones.							
		81.55-82.15 m: Core is easily scratched (sericitic) and shows thin crenulations which are folded adjacent to upper silicified zone; weak suggestion of banding (bedding?) @ 20° CA.							
		82.40-82.44 m: Late brecciation sealed with siliceous cement @ * 50° CA.							
		82.44-83.91 m: Localized medium-dark green porphyroblasts from 1-3 mm, * 5-10%; probably cordierite altered to chlorite.							
		83.91-88.03 m: Up to 3% thin wispy quartz veinlets cutting core at random orientations; very weak foliation @ 30° CA @ 88.50 m; 86.72-86.97 m - network of 10% thin quartz veinlets give "crackle" appearance.							
		88.03-89.82 m: Interval is more siliceous with diffuse, patchy silica, minor pink colouration to fragments of core; late quartz-epidote fractures crosscutting possibly earlier chloritic fractures; random orientations.							
		89.82-90.25 m: Intense microbreccia similar to 82.40-82.44 m, contacts @ 86° CA.							
		90.25-92.80 m: Slightly less altered and coarser-grained: * 25-30% creamy to greenish or pink coloured feldspar 0.5 mm to 2 mm with ragged or broken outlines; * 3-5% bluish subhedral quartz; very fine-grained matrix is greenish-brown and chloritic - interval has * 3% irregular quartz veins from 1 mm to 1 cm wide varying from 20-70° CA; epidote wisps and veins (up to 5% of interval) occur with quartz or crosscut everything; weak to moderate local magnetism.							

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FROM		TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	WIDTH	ASSAYS Cu (ppm) Pb (ppm) Zn (ppm) Ba (ppm)				
			92.80-94.35 m: More altered with moderate to weak magnetism; patchy, mottled porphyroblasts with diffuse boundaries are exposed on dry core; could have been cordierite retrograded to chlorite; spots are 0.5-1.0 cm diameter and comprise ~ 10% of interval; matrix or groundmass is quartz-sericite-chlorite; up to 5% bluish-grey subrounded amorphous quartz up to 1.5 mm diameter; ~ 1-2% euhedral feldspar crystals; ~ 2% whitish quartz veins 3 mm to 2 cm generally @ ~ 45-50° CA. - trace disseminated specks of py. - sharp lower contact @ 35° CA.									
94.35	121.35		INTERBEDDED SERICITIC TUFF (ASH) AND FERROUGINOUS CHERT WITH MINOR ARGILLACEOUS SEDIMENT - light grey green, with red spots in upper part of section, interbedded with blood red to purplish red beds. - very fine-grained to amorphous chert with very fine-grained tuff or argillaceous sedimentary beds. - tuffaceous beds are almost entirely sericitized (90% sericitized) with ~ 10% porphyroblasts, 0.5-3 mm subrounded red or creamy coloured to ~ 104.80 m; beds are generally from 25 cm to 1.00 m thick and sometimes have thin interbedded chert; <2% bedding contacts with chert dominated intervals range from 20-70°, but average about 30°; tuffaceous units are strongly foliated and locally strongly crenulated; they are rarely magnetic except occasionally near chert contacts; local concentrations of very fine-grained specular hematite. - local patches of very fine-grained disseminated magnetite replacing cherty domains also in crosscutting tension dashes (1 mm x 1 cm). - towards base of interval, felsic tuffs are strongly deformed and intensely contorted. 94.35-104.80 m: Spotted, sericitic tuffs comprise ~ 40% of interval; argillaceous sediments comprise ~ 40% and jasper about 20% - argillaceous sediments are generally dark grey, soft and locally spotted. They occur thinly interbedded within cherts (1-5 mm) or as thicker beds (~ 1.80 m) such as from 95.65-97.50 m; foliations vary from 20-40° CA and can be as strongly crenulated as the lighter, more sericitic tuffs.	202501	98.15	98.47	0.32	3	28	56	140	

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

- red cherts, jasper, are generally massive and commonly fractured or brecciated locally.

94.57-95.22 m: Strong deformation; tuffaceous intervals are crenulated and cherty intervals are brecciated; chert fragments are elongated parallel to foliation @ 30°, upper contact @ 45°, lower contact varies from 0.5 cm to 6 cm ± 2 cm; contacts with tuff or argillaceous sediments are commonly brecciated or contorted.

104.60-104.70 m: Rubbly core; probably small fault; minor hematitic gouge.

104.80-119.80 m: Mainly ferruginous chert (75%) with argillaceous sediments (25%) moderate-weak local magnetite seems to increase with depth and occurs between cherty and argillaceous beds; core is fractured by several thin ± 3% quartz veinlets giving core a local "crackled" appearance; (1% later creamy-rusty thin quartz-carbonate veinlets crosscut everything; banding or contacts between cherts and argillaceous sediments vary:

105.20-105.70 m - 35-40° CA; cherty, banded,

105.70-106.00 m - mixed "dirty" sediment with fine chert fragments in argillaceous matrix similar to bottom sections in GB-138 & GB-139 @ 40° CA (MRL),

106.00-108.50 m - brecciated, contorted chert with irregular contacts with argillaceous sediments; some fragments of "dirty" sediment ± 5-6 cm caught up in chert,

108.50-118.40 m - generally more uniform banding of jasper with thin dark grey argillaceous beds varies from 40° CA @ 110.10 m to 26° @ 116.70 m, but averages 30° CA,

116.35-117.40 m - broken core to 3 cm; could be fault zone, some lost core but no evidence of gouge,

118.40-119.80 m - mainly dark grey argillaceous sediment (80%) minor chert (20%) which tends to be brecciated; long axis of fragments @ ± 50° CA; upper contact @ 20° CA; gradual lower contact into strongly deformed felsic sericitic tuffs.

119.80-121.35 m: Contorted, strongly deformed sericitic tuff; silicified with irregular diffuse quartz veins and quartz-flooded patches comprising 10-15% of interval; crenulated @ 120.70-120.75 m; shearing @ 45° & 40° CA respectively.
- sharp lower contact @ 35° CA.

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	WIDTH	ASSAYS			
							Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)
121.35	128.50	MAFIC DYKE/VOLCANIC? (Roberts Arm)								
		- dark green; fine-grained; massive chloritic rock; similar to earlier dyke @ 72.81 m, except this dyke is moderately magnetic; rock is competent and has occasional (1%) quartz veins tending to follow core axis with local epidote patches; irregular lower contact; no mineralization.								
		- upper contact is very fine-grained to cherty over 10 cm.								
		121.54-121.90 m: Block of silicified contorted sericitic tuff; sharp upper contact @ 30° CA & sharp irregular lower contact @ roughly 70° CA.								
128.50	192.06	INTERBEDDED SERICITIC TUFFS WITH RED AND GREY CHERTS AND MINOR ARGILLACEOUS SEDIMENTS	202502	137.88	138.68	0.80	4	30	62	770
			202503	140.30	140.65	0.35	4	8	8	340
			202504	159.00	159.50	0.50	5	24	34	838
		- similar to unit from 94.35-121.35 m, but less red chert and more strongly deformed.	202505	165.12	166.12	1.00	7	28	36	520
			202506	174.00	174.65	0.65	2180	6	32	110
			202507	182.75	182.80	0.05	28	8	54	600
		128.50-128.85 m: Regular banded red chert @ 60° CA; lower 10 cm fractured; rubbly.	202508	185.65	186.85	1.20	12	38	88	5480
		128.85-129.40 m: Hard grey chert; banded @ roughly 45° CA; lower 10 cm is reddish coloured; minor narrow (2 cm).								
		129.40-130.61 m: MAFIC DYKE								
		- offshoot of 121.35-128.50 m, very fine-grained, hard; silicified; fractured upper contact; epidote over ~ 1 cm @ lower contact; no sulphides; strong local magnetism.								
		130.61-131.44 m: Fine-grained hard ferruginous chert (80%) banding and lower contact ~ 50° CA; irregular pygmatic quartz vein, some which are ~ 90° CA; epidote alteration over 1.5 m @ 131.28 m; strong local magnetite.								
		131.44-136.45 m: Mainly contorted silicified felsic tuffs and/or argillaceous sediments; core is soft and non-magnetic except in narrow red and dark grey banded chert intervals (135.20-135.40 metres; upper contact @ 85° CA; lower contact @ 44° CA); core is mainly sericitic with chlorite giving core a dark-medium greyish-green colour; locally silicified with zones of quartz flooding and irregular wormy quartz veins (10%) tending to								

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS				
						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)
		follow average foliation of $\approx 30-45^\circ$ CA; relatively competent; no sulphides.								
		136.45-140.65 m: Mainly red ferruginous chert, thinly interbedded with dark grey-purple argillaceous rock; crosscut by $\approx 1\%$ patches and wisps of quartz $\pm$ quartz-carbonate; banding is irregular but generally between 40° and 45° CA; local weak-moderate magnetism; no sulphides.								
		138.68-140.03 m: FAULT ZONE - core is badly broken with clay gouge ≈ 139.80 ; epidote common along rubble surfaces. - chert is more massive from 140.66-141.18 m; hairline quartz & quartz-calcite fractures $\approx 2\%$.								
		140.65-147.20 m: Mainly altered, sericitized fine-grained felsic tuffs (85%) with interbedded, folded, laminated grey-green cherts (15%). Tuffaceous units are locally porphyroblastic (dark grey-green; hard; 1-3 mm. up to 8%). - grey chert is fractured towards top or folded in a "dome & basin" pattern with long axis $\approx$ subparallel to CA (10 cm) and ≈ 5 cm wide; unit is contorted and foliation is highly variable; $45-70^\circ$ /CA. - local patchy, wormy silicification towards lower 1.5 m; no mineralization; negligible magnetism; lower contact with red chert is sharp @ $\approx 45^\circ$ CA.								
		147.20-160.67 m: Interbedded red cherts (22%) with clastic cherty sediments or contorted tuffs (78%). - unit is strongly fractured; cherts are commonly crosscut by thin creamy to pinkish coloured quartz-calcite veinlets which tend to follow bedding; bedding highly variable: 148.28 m = 30° CA; 150.45 m = 20° CA; 154.10 m = $\approx 55^\circ$ CA; in vuggy zones, epidote also lines fractures; thicker grey quartz veins, 2 cm to the widest @ 152.38-152.53 m (parallel CA) commonly crosscut the core; the veins are typically vuggy from leached carbonate; orangy-rust-coloured calcite still lines cavities.								
		151.00-154.43 m: Mainly contorted tuffs and/or argillaceous sediments with pervasive silica flooded patches and "wormy" segregations. - unit is variably very strongly to moderately magnetic. - no sulphides observed. - lower contact is brecciated and irregular magnetic.								

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

occasionally fills fractures.

160.67-173.64 m: Medium Grey felsic Volcanic Tuffs
- fine-grained; locally crenulated and contorted to almost massive with stretched amygdulose which tend to have light grey to greyish green cores and darker rims (2 mm to 2 cm on average); from 163.03-166.12 m, these "amygdulose" host fine-grained disseminated py; minor biotite = 164.50 m.
- more deformed core seen in zones of patchy, "wormy" silicification: 160.67-161.50 m, 164.65-167.60 m; 170.90-171.25 m.
- local ghost porphyroblasts = 152.40 m.
- vague very weak foliation @ 166.15 m @ 60° CA and @ 168.15 m = 45° CA; sheared @ 50° CA @ 170.70 m.
- unit is non-magnetic.
- trace to minor finely disseminated pyrite in "amygdulose" as well as throughout core and associated with silicified zones.
- lower contact sheared @ 30° CA; sharp contact with "micro breccia zone".

173.64-183.54 m: Sericitic felsic Tuff (90%) interbedded with Red Chert (10%)
- upper 2.0 m is "micro-brecciated"; 1 mm to 2 cm subangular fragments sealed with anastomosing quartz-epidote veinlets; some fragments of red chert caught up (<1 mm to 3-4 cm) weak to moderate magnetite present, often in fractures.
- chert is generally crosscut by creamy-pink calcite-quartz-epidote veinlets; sericitic tuff generally strongly deformed; crenulated 176.27 m - laminations @ 45° CA; 176.50 m @ 60° CA; 178.35 m: crenulations @ = 20° CA.
- vuggy quartz-calcite vein from 179.73-178.83 m @ roughly 70° CA; epidote-filled fracture crosscuts quartz.

179.00 m: 2 cm of Rubble, Possible Small Fault.

179.40-183.54 m: Predominantly Contorted Fine-Grained Metatuffs
- medium grey-greenish grey, fine-grained, sericitic with minor chlorite although foliation varies, on average it is @ = 50° CA; localized thin tight crenulations; irregular patchy silicification; minor trace epidote along siliceous patches; trace weak magnetism; irregular occurrence of alteration patches with interiors of quartz-epidote rimmed by chlorite.

182.80-183.30 m: Presence of lapilli-sized (10%) fragments

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						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)
		generally 1 mm to 1.5 cm x 3 mm; stretched, long foliation; no mineralization noted; lower contact @ 60° CA.								
		183.54-188.50 m: Ferruginous (red) chert (c. 90-95%) interbedded with purplish grey cherty metasediments/tuff; chert is variably laminated with bedding between 45-60° CA; thin creamy hairline quartz-calcite/epidote veinlets crosscut core; some parallel to foliation/bedding.								
		185.65-192.06 m: Major FAULT ZONE								
		185.65-188.50 m - strongly to intensely fractured; brecciated with increasing silica to 40% infilling fractures (from underlying quartz vein); up to 10% epidote veinlets to 186.55 m; massive magnetite in fractures from 186.65-186.85 m; trace localized subrounded reddish-brown sph? qt? (2-4 mm) in calcite patches.								
		188.50-192.06 m - Fractured white quartz vein: fractures irregular but more often 60-70° CA; infilled with sericite ± chlorite as one approaches "gritty" gouge zone; 189.56-189.80 m; almost 90% sericite; 10% qtz subparallel to CA; intensely ground core/gouge zones @ 190.60-190.70 m; 191.34-191.40 m; 191.60-192.02 m; strong chloritic alteration along fracture surfaces; lower contact 20° CA.								
192.06	239.04	PELSIC VOLCANIC TOPPS (RHYOLITIC; CRYSTAL; LAPILLI)	202509	198.07	199.50	1.50	1	8	44	880
		- medium grey to dark grey-green; fine-grained.	202510	207.90	209.40	1.50	1	16	24	550
		- foliation varies though some zones don't appear to be foliated and are massive probably due to pervasive alteration?	202511	213.70	213.75	0.75	1	10	28	440
		Average 45-60° CA.	202512	224.75	225.25	1.00	11	12	50	450
		- <1% localized quartz ± epidote veinlets; irregular	202513	225.15	226.70	1.45	5	24	64	290
		silicification patches common as @ 200.95-214.73 m (30%); minor biotite.	202514	226.70	228.20	1.50	1	28	106	250
		- weak "ghost-like" porphyroblasts which appear to be retrograded to chlorite, i.e. from 195.17-196.00 m and 198.12-200.95 m; generally ragged edges stretched 1-2 mm to 3 mm.	202515	228.20	229.20	1.00	21	40	114	410
		- rock is sericitic with weak to locally more strongly chloritic zones; up to 3-5% quartz eyes.	202516	229.20	231.20	2.00	1	24	100	310
			202520	234.60	235.60	1.00	4	20	92	500
			202517	235.60	236.00	0.40	11	20	112	550
			202521	237.10	238.70	1.60	23	16	100	760

214.73-221.50 m: Felsic Tuff(?) generally massive but at 218.50 m weak foliation @ 55° CA; 1-3% quartz eyes or broken quartz

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						WIDTF	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ba (ppm)
		crystals = 0.5-1 mm in fine-grained siliceous matrix; up to 5-10% very fine-grained biotite disseminations; fine-grained disseminated py, up to 0.5% present in more biotite altered sections.								
		221.50-239.06 m: Felsic Metavolcanic - Ash Tuff with Lapilli Tuff - medium grey to darker grey-green in slightly chloritic zones. - brownish patches to mottled look in more biotite rich zones. - core is schistose locally & tightly crenulated, grading into almost massive homogeneous sections through the siliceous ash tuff; stretched lapilli's @ 225.75 m @ 30° CA up to 6 cm-0.5 cm slightly folded; foliation varies s/a @: 224.45 m = 40° CA; 50° @ 227.00 m, 90° CA @ 227.10 m; in general = 60° CA; 50° @ 236.20 m; 35° @ 237.50 m. - local alteration patches of silicification with epidote and irregular quartz veins = 2 mm to 1.5 cm wide (diffuse contacts) such as @ 224.25 m to 224.95 m and @ 226.00-227.65 m; what could have been coarse lapilli often has light greenish grey reaction rims from silicification s/a from 230.15-231.20 m; patchy disseminated biotite scattered throughout core from (0.5% to 8 or 10% locally; 232.85-233.80 m shows a mottled biotite altered interval with irregular light grey ragged felsic outlines; very fine-grained light grey siliceous intervals from 228.65-228.75 m and coarse fragments of the same composition @ various locations such as @ 230.70 m (= 2 cm x 2 cm) and @ 238.25-238.33 m in a fine-medium-grained lapilli tuff. - weak local magnetite. - mineralization varies but is generally present as very fine-grained disseminated py scattered or speckled throughout the core up to = 0.5%; local variations bring clusters of fine-grained py to 4-5% as described in sample locations; a few very short stringers of semi-massive py seen @ 235.82 m. - core is relatively competent with pieces of core from 3 cm to 30 cm averaging = 20 cm. - sharp lower contact @ 50° CA; localized quartz veins ± calcite and garnet at the contact.								
239.06	345.70	VERY FINE-GRAINED LOCALLY SILICIFIED MAFIC METAVOLCANIC (some units could be dacite, because so hard)	202518	238.20	239.06	0.86	63	20	68	650
			202519	239.06	239.56	0.50	83	18	160	800
			202522	242.75	243.35	0.60	97	12	102	720
		- dark green, very fine-grained, indurated locally; lighter greyish-green silicified patches irregularly distributed;	202523	256.00	256.55	0.55	62	2	58	320
		brownish bands or patches locally, probably due to biotite?	202524	276.70	278.00	1.30	86	2	102	660
			202525	290.05	290.95	0.90	62	2	154	900

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS			
						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)
		- core is generally massive, hard, equigranular; weak foliation sometimes present.	202526	292.70	294.70	2.00	62	2	132
		- 1% calcite veins generally at high degree to CA, calcite veins are most frequently observed > 1% diopside-quartz-epidote	202527	305.12	306.32	1.70	45	2	130
		brownish garnet veins or patches present as at upper contact; generally they are irregular (see 243 m).	202528	310.75	312.25	1.50	36	24	220
		- generally moderate to weakly magnetic throughout.	202529	323.50	325.50	2.00	35	2	138
		- composition of interval is mainly chloritic (stronger chloritic zones are softer & can be scratched with a knife); grain size doesn't allow identification of other minerals though many intervals are quartz-rich (hard), localized patches of light greyish silicification present particularly rimming some calcite veinlets; minor epidote and occasional gt; and/or a dull greenish-diopside, bronzy-brown coloured mineral could be enstatite or bronzite, also sometimes present in quartz-calcite domains	202530	329.60	331.60	2.00	40	2	136
		- biotite patches common around contacts with felsic tuffs	202531	343.25	345.25	2.00	36	2	130
		- mineralization generally erratic though locally fine-grained disseminated py ! po not uncommon; short semi-massive py stringers @ 243 m.							
		- core is fairly competent; 5-60 cm pieces, usually ~ 25 cm.							
		- Interflow meta sediments/meta-tuffs present at:							
		241.65-242.75 m: Light-medium grey; fine-grained, foliated & folded; foliation varies from 10-15° @ upper sharp contact to 40° CA @ lower contact; moderate to strong silicification; 1-2% visible quartz eyes; non-magnetic; finely disseminated fine-grained py to 0.5%.							
		250.60-251.75 m: Medium-dark grey, fine-grained-weakly foliated @ ~ 45° CA; ~ 2-3% quartz eyes towards bottom of interval; local silicification towards top of interval; dark brown very fine-grained band of ?? @ 250.90 m; negligible to trace mineralization; weakly magnetic; sharp lower contact @ 60° CA.							
		255.76-255.93 m: Local silicification; fine-grained medium greyish green with fine chloritic fractures @ ~ 55° CA.							
		267.10 m: 2 cm 'micro-breccia' sealed with quartz-epidote-calcite @ 30° CA. Occasional weak foliation in mafic unit especially in more chloritic and biotitic zones, i.e. 45° CA @ 279.00 m.							

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS			
						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)
		278.10-281.00 m: More abundant quartz-garnet:diopside:epidote-calcite veins subparallel to foliation; py to 1%.							
		- interflow siliceous meta-tuffs: narrow intervals @:							
		289.46-290.05 m: foliation @ 30° CA							
		290.55-291.90 m: foliation @ 50° CA							
		292.60-294.54 m: foliation @ 45° CA.							
		- these felsic tuffs are light grey, with moderate irregular silicification; chlorite-biotite bands parallel foliation; generally non-magnetic; trace disseminated fine-grained py.							
		297.70-298.48 m: Very hard fine-grained mafic metavolcanic; strongly magnetic with ~ 1% disseminated fine-grained py, sometimes occurs in chloritic stringers; associated with minor po along foliation.							
		298.48-300.90 m: Banded appearance (dark green & white) resulting from ~ 50% carbonate (calcite) & quartz bands in mafic chloritized volcanic; contacts parallel to foliation @ 45° CA; lower contact has 2 cm wide semi-massive band of reddish-brown garnet(?), no visible sulphides; moderate mt.							
		300.90-304.70 m: Flow Top? Mafic Volcanic							
		- dark green, somewhat contorted or brecciated appearance with 1-2 mm wide light grey quartz & calcite infilling the chlorite, & biotite altered rock.							
		- core is quite hard and fine-grained.							
		- strongly magnetic.							
		- negligible sulphide.							
		- competent rock.							
		- upper and lower contacts are gradational.							
		304.70-310.60 m: Interflow Pelitic(?) Tuffs (Chloritized)							
		- medium-dark grey-green with wispy irregular white patches of quartz & quartz-calcite; generally fine-grained.							
		- foliation very weak; core breaks at angle to thin banding; banding or laminations (~ 1-3 mm) @ 48-50° CA.							
		- compositionally, the core is strongly to moderately chloritic with local biotite; generally the core is hard, therefore fair bit of silica; <1% light grey felsic fragments (1-3 cm x ~ 0.3 cm) as @ 306.60-306.90 m; minor py along 48° foliation.							
		306.12-306.92 m: FAULT ZONE							
		- blocky chloritic core either side of ground up zone; unable to							

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FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	ASSAYS			
						WIDTH	Cu (ppm)	Pb (ppm)	Zn (ppm)
		observe contacts.							
		309.10-309.86 m: Definitely a felsic tuff with glassy clear quartz eyes; light grey massive with weak foliation @ 60-70° CA; not magnetic.							
		309.86-310.60 m: Lower altered zone (intense brown soft biotization) contorted with wisps of light grey quartz-calcite; strongly magnetic; gradual lower contact defined by decreasing amount of biotite; minor disseminated py.							
		310.60-345.70 m: Definitely Mafic Metavolcanics							
		- core is medium to dark grey-green; dense, very fine-grained massive and locally very hard, silicified or 'cooked'; several (= 2%) calc-silicate epidote-garnet-quartz-calcite veins and patches observed at varying degrees to CA; strongly magnetic.							
		- very weak foliation sometimes defined by quartz-epidote garnet veins or more chlorite-biotite concentrations, i.e. 50° CA @ 313.32 to 315.35 m.							
		- some intervals are more massive, homogeneous, slightly coarser-grained and can be slightly lighter in colour (less chlorite); fine-grained disseminations up to 5% is commonly observed (see type sample @ 315.80 m); this rock can be less altered and almost looks like a fine-grained intrusive, but there are no sharp or distinct contacts (probably center of a mafic flow).							
		- scattered garnet-epidote veins are seen in these intervals and minor thin calcite or quartz-calcite veinlets occasionally rimmed with chlorite are present. These more uniform massive intervals @: 315.35-316.05 m, 323.50-326.00 m, 329.60-341.00 m.							
		- mineralization is disseminated fine-grained py, po? up to 0.5%, 1% locally, magnetic up to 5 or 8% evenly distributed.							
		- core is generally competent @ 344.42-344.70 m where core is blocky (1 cm-4 cm pieces).							
		- lower contact sharp @ 10° CA; strongly chloritic with ~ 5% calcite veins ~ subparallel CA.							

345.70 385.27 MAFIC DYKE

- medium-dark grey/green; 'fresh-looking'.
- very fine to fine-grained.
- massive, uniform, showing no foliation at all.
- composition is hard to determine due to fine-grain size but

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

rock appears to be mafic with moderate to weak chlorite content;
core is homogeneously moderate to strongly magnetic.
- rock has very little alteration except few chloritic fracture
surfaces; planar hairline veinlets of calcite occasionally with
epidote comprise 10.5% of core; 381.90-382.34 m - stronger
epidote veining generally at 90° CA (21).
- mineralization is sparse; trace to minor fine-grained
disseminated py.
- core is generally competent; core breaks in pieces (on
average) ~ 60 cm generally perpendicular to and at high angle
to CA; minor fracturing @ 350.10-350.52 m and grinding @
365.60 m (core lateral); fault zone - gouge @ 382.34 m; from
382.34 m to EOH (385.27 m) core is very broken; fractured with
intense chloritization on fracture surfaces (could be back into
mafic volcanic flow @ 382.34 m).
- upper contact is very sharp defined by chilled cherty, very
dark grey/green margin @ 13' CA. Unclear if lower contact is
where blocky core starts.

385.27 EOH (385.27 m)

Tropari Tests: 79.25 m 107° Az -61° dip
121.31 m -60° dip
185.32 m 116° Az -57° dip
249.94 m 117° Az -55° dip
381.75 m 123° Az -53° dip

DOWN-HOLE SURVEY DATA

DEPTH	INCLINATION	BEARING
79.25	-61.00	87.00
185.32	-57.00	96.00
249.94	-55.00	97.00
381.75	-53.00	103.00

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			ASSAYS				
FROM	TO	LITHOLOGICAL DESCRIPTION	SAMPLE No.	FROM	TO	WIDTH	Cu (ppm) Pb (ppm) Zn (ppm) Ba (ppm)
		DEPTH	INCLINATION	BEARING			
		385.27	-53.00	103.00			

PROJECT: ROBERT'S ACH - GULL BRIDGE

SAMPLE NUMBER	SAMPLE INTERVAL			Cu ppm	Pb ppm	Zn ppm	Ba ppm	SULPHIDES	DESCRIPTION
	FROM	TO	LENGTH						
202501	98.15	98.47	0.32	3	28	56	140	tr spawbr hem	- cherty Jasper; brecciated
202502	137.88	138.68	0.80	4	30	62	770	none visible	red chert sample w argillaceous chert; qtz - Fe carb veins.
202503	140.30	140.65	0.35	4	8	8	340	none visible	chert sample
202504	159.00	159.50	0.50	5	24	34	830	none visible	fractured chert with mt-filled fractures; vuggy, qtz-carb vein
202505	165.12	166.12	1.00	7	28	36	520	tr f.gr. py	felsic tuff
202506	174.00	174.65	0.65	2180	6	32	110	10.5% po 3% py, cp	strongly fractured magnetic chert and cherty argillite; py veinlets
202507	182.75	182.80	1.05	28	8	54	600	no sulfides	patchy, silicified tuff with minor chl; tr Fe-carb assoc. w qtz patches tr mt
202508	185.65	186.85	1.20	12	38	80	5480	none visible	brecciated chert; qtz-cc; ep; mt veins
202509	198.00	199.50	1.50	<1	8	44	880	none visible	felsic tuff weak to moderately porphyroblastic; strong-mod chl
202510	207.90	209.40	1.50	<1	16	24	550	tr v f.gr. euhedral py	felsic tuff pervasive silicification; minor ep; localized chl
202511	213.00	213.75	0.75	<1	10	28	440	0.5% py along chl fac.	felsic tuff; f.gr. biotite; local silicification
202512	224.25	225.25	1.00	11	12	50	450	0.5% dissem. py	felsic tuff; up to 10% f.gr. biotite; local qtz-ep patches
202513	225.25	226.30	1.05	5	24	64	290	0.5% dissem. py	as above, tightly crenulated w ~5% biotite
202514	226.70	228.20	1.50	<1	20	106	250	0.5% f. gr. py	as above; locally siliceous; 1cm wide qtz-ep veins
202515	228.20	229.20	1.00	21	40	114	410	1% f.gr. py	siliceous; massive; up to 10% f.gr. biotite; minor mt
202516	229.20	231.20	2.00	<1	24	100	310	0.5% f. dissem. py	fine felsic lapilli tuff; tr local mt; minor biotite
202517	235.60	236.00	0.40	11	20	112	550	0.5% f-gr. py	massive homogeneous felsic tuff; ~3% biotite
202518	238.20	239.06	0.86	63	20	68	650	4-5% dissem. py	locally silicified tuff; dissem. & clusters py

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