SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135
Collar Eastings: 169.00
Collar Northings: 4660.00
Collar Elevation: 0.00
Grid: Main
Collar Inclination: -60.00
Grid Bearing: 125.00
Final Depth: 572.41 metres
Logged by: M.H.Lenters
Date: June 20 to July 5, 1990
Down-hole Survey: Tropari
Purpose: Test Southern Extention of Gullbridge mineralized horizon.

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| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | WIDTH | ASSAYS Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1.52 | OVERBURDEN | | | | | | | | |
| 1.52 | 29.78 | RHYOLITE (Weakly Brecciated) | | | | | | | | |

- variably coloured sections of mottled medium grey, medium greenish grey, and medium purplish or salmon pinkish grey throughout unit. The purplish to pinkish sections tend to be more massive and aphanitic, locally containing up to 5%, 1 to 2 mm, subhedral, plagioclase phenocrysts, while the medium grey and green-grey sections are massive and weakly foliated to locally moderately foliated, with the foliated sections having a fine-grained quartzose-sericitic composition

- unit is a feldspar phyric rhyolite, locally shear foliated, and generally exhibiting some latter brittle fracturing due to faulting

- unit is nonmagnetic, hard, with quartzose-feldspathic: sericitic composition; greenish schistose zones exhibit weak to locally moderate pervasive sericite-carbonate alteration of feldspar

- unit has a weak to moderate pervasive silicified appearance partly due to mottled rhyolitic composition, and partly due to diffusely bounded quartz veins and patches

- foliation where apparent, generally at about 20° CA

- 3 to 5%, thin (hairline to 1 cm), milky white quartz veins that generally form irregular veins with slightly diffuse contact margins . Veins are branching to irregular though mostly somewhat subplanar at 45 to 80° CA. In places, veins are crosscutting/networking. Veins are locally offset 1 to 3 cm on late fracturing

- below 20 metres quartz veining is slightly more common (5%), and consists of irregular quartz patches as well as veins, locally containing minor to 20% bright salmon pink feldspar? colouration.

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|---|---|---|---|---|---|---|---|---|---|---|
| | | These feldspar-rich zones within the quartz veins are probably not original feldspar but are altered incorporated wallrock fragments and alteration of the wallrock adjacent to the quartz vein, giving appearance of quartz-feldspar veining. Veins are somewhat diffusely bounded | | | | | | | | |
| | | - unit exhibits moderate amount of very thin, planar (hairline) fracturing/brecciation concentrated in 1 to 10 cm zones with intense criss-cross network fracturing throughout unit, and similar but less intense development of fracturing between these zones. Fractures are light yellow in colour, probably due to sericite-epidote-carbonate composition of clay coatings on fractures. Locally a few, thin (0.5 to 1cm), breccia seams/bands occur with angular rhyolite fragments in a matrix of the lime yellow epidote-carbonate altered clay material. Brittle fracturing, quite variably oriented between 20 to 80° CA with 45 to 60° most common | | | | | | | | |
| | | - unit contains no sulphide mineralization | | | | | | | | |
| | | - unit moderately broken with most core broken into 5 to 15 cm lengths along fractures, and about 20% of core rubbly broken into ≤ 0.5 to 1 cm pieces recovered across 10 cm 100 cm wide zones | | | | | | | | |
| | | - probably complete core recovery although difficult to establish amount of unrecovered core from rubbly recovered sections | | | | | | | | |
| | | - lower contact is sharp intrusive contact at 40° CA. | | | | | | | | |
| 29.78 | 32.00 | MAFIC (DIABASE) DYKE | | | | | | | | |
| | | - medium to dark green, very weakly altered (carbonate-epidote?) to medium green, in patchy sections where fine grain size is most evident | | | | | | | | |
| | | - aphanitic, chilled upper margin grading to fine-grained (1 mm) through most of unit. Unit exhibits 2 to 3%, small (0.1 to 2 mm), subrounded to subhedral, white plagioclase phenocrysts often occurring in/surrounded by thin (< 1 mm), round, dark green (chloritic?) halos | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | - homogeneous, massive, nonfoliated and non- to very weakly magnetic | | | | | | | | |
| | | - minor (1 to 2%), hairline, calcite and epidote-carbonate fractures as irregular to wavy, but generally planar, fractures oriented at various angles to CA, but generally between 50-70° CA | | | | | | | | |
| | | - no quartz veining | | | | | | | | |
| | | - trace pyrite as small grains generally in light yellowish epinote altered patches | | | | | | | | |
| | | - competent core with 10 to 25 cm breakage, generally along fractures at 70 to 90° CA | | | | | | | | |
| | | - lower contact poorly recovered with minor ground core and rubbly breakage. No contact angle discernable, but chill margin fragments identifiable. | | | | | | | | |
| 22.00 | 33.20 | RHYOLITE (Weakly Brecciated) | | | | | | | | |
| | | - same as 1.52 to 29.78 metres | | | | | | | | |
| | | - moderately broken core, with recovery as 5 to 10 cm pieces | | | | | | | | |
| | | - lower contact sharp intrusive contact at 40° CA. | | | | | | | | |
| 33.20 | 36.88 | MAFIC (DIABASE) DYKE | | | | | | | | |
| | | - same as 29.78 to 32.00 metres | | | | | | | | |
| | | - medium to dark green, very fine to fine-grained with aphanitic chilled margins and coarser fine-grained central zone. -ophitic textured plagioclase/mafic mineral composition with grain size visible in medium green coloured, weakly carbonate-epidote altered sections | | | | | | | | |
| | | - unit exhibits 3%, small (0.1 to 3 mm), white, subhedral to euhedral plagioclase phenocrysts/laths, locally appearing weakly zoned, and often occurring in round, dark green (chloritic) alteration halos 1 to 3 times the width of the | | | | | | | | |

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| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH Cu (ppm) Pb (ppm) Zn (ppm) Ba (ppm) |
|---|---|---|---|---|---|---|
| | | phenocryst<br><br>- homogeneous, massive, non-foliated and non- to very weakly magnetic<br><br>- minor (1-2%), hairline calcite and/or epidote fractures as irregular planar fractures, and one, 2 to 4 mm wide, salmon pink calcite-feldspar? vein at 30° CA<br><br>- moderately broken core with 2 to 10 cm breakage generally on fractures at 60 to 70° CA. Most fractures exhibit lineated slickenside striated surfaces<br><br>- lower contact not well recovered with contact angle not discernable. | | | | |
| 16.88 | 97.50 | RHYOLITE (Moderately to Intensely Brecciated)<br><br>- same rhyolite as 1.52 to 29.78 m and 32.86 to 33.20 m but moderately to intensely brecciated, probably due to late faulting (brittle fracturing)<br><br>- mostly slightly brownish to purplish to salmon pinkish mottled zones of medium greys with lesser sections having medium greenish grey or grey colours. The former are generally more massive, feldspar phyric rhyolite as in 1.52 to 29.78, while the greenish grey sections are weakly to moderately shear foliated zones with a fine-grained, quartzose-sericitic composition<br><br>- foliation generally at 0 to 30° to CA with 15 to 20° most common; foliation is somewhat wavy planar<br><br>- locally, thin (2 to 5 mm), irregular bands of pinkish rhyolite are poorly (wavy discontinuous) interbanded with similarly thick, greenish, sheared rhyolitic bands with shear banding defining/parallel to foliation direction<br><br>- unit contains 5% quartz veining as 1 to 20 mm wide milky white, irregular veins, blebs and patches. Most are discernable veins oriented at various angles to CA, but others are irregular branching or network patches. Quartz often has diffuse contacts "melting" into wallrock, and often cause an intense salmon pink coloured alteration of | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | included wallrock fragments and thin (1 to 10 mm) sections of the wallrock adjacent to veining | | | | | | | | |
| | | - more massive rhyolitic sections locally exhibit fine (hairline to 2 mm) criss-cross networking of irregular but generally planar, greyish silica healed fractures. These appear to be the same generation as the larger milky white veins. | | | | | | | | |
| | | - locally, trace amounts of finely disseminated pyrite, mostly associated with quartz veined sections | | | | | | | | |
| | | - unit is well brecciated with intensity of fracturing generally increasing downhole. From 36.88 to 64.00 m unit is similar to 1.52 to 29.78 with moderate amount of isolated zig-zagged/offset, subplanar veinlets, locally concentrated into zones of more intense criss-crossing, network and/or anastomosing fracture veinlets. Fractures have line yellowish epidote-carbonate?-sericite? very fine, clay gouge coating. Locally, these form thin (0.5 to 2 cm), breccia bands containing 50 to 75%, small angular rhyolitic fragments in fine alteration material matrix. Locally, this clay appears to be fault gouge, but it is relatively hard and competent | | | | | | | | |
| | | - fractured sections of unit are locally weakly vuggy, and quartz veining is offset by several centimeters, suggesting late faulting/fracturing (post peak metamorphism and quartz veining) | | | | | | | | |
| | | - below 64 metres unit is more intensely brecciated/fractured with 50% of section exhibiting about 5 to 15% fracturing and the other 50% exhibiting more intense fracturing with some thin (10 to 30 cm) zones with 50% fracturing appearing as an intense shattering of the original rhyolite by tight network of crisscross, irregular to subplanar fracture veinlets. Although all orientations of fracturing occur, the preferred and average orientation is 45 to 65° CA; with thin (0.5 to 2 cm) "gouge" bands/zones mostly at ± 60° CA | | | | | | | | |
| | | - core is well broken, particularly within intensely fractured sections with core breaking apart along clay coated fracturing. Generally 1 to 10 cm core breakage, but including numerous small to larger (a few to 10 or 15 cm long) rubbly broken core sections. Core recovery probably about 95% but not readily discernable through broken sections | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | - well broken/brecciated rubbly recovered core sections from: 50.90 to 52.60 m, 56.40 to 58.70 m including lost core zone from 57.90 to 58.50 m, 63.90 to 64.60 m, 65.00 to 65.90 m, 68.40 to 69.80 m, 75.10 to 76.00 m, 78.40 to 79.00 m, 79.88 to 80.60 m, and 87.40 to 97.50 m including section from 91.50 to 97.50 where core is very rubbly | | | | | | | | |
| | | - most intense fracture brecciation locally forming thin fault? bands occurs at 61.25 to 61.30 m @ 50° CA, 63.05 to 63.10 m @ 60° CA, 67.40 to 67.60 m and 80.50 to 85.75 m including two fault "gouge" zones at 82.30 to 82.35 m @ 65° to CA and 83.72 to 83.75 m @ 70° CA | | | | | | | | |
| | | - lower contact not well recovered (rubble) and contact orientation not discernable | | | | | | | | |
| | | - between 90.00 m and contact at 97.60 m are a few sections and rubble pieces of "zebra striped" felsic metavolcanic rock similar to the underlying unit, suggesting somewhat gradational change into underlying unit | | | | | | | | |
| 97.50 | 99.40 | SHEAR FOLIATED (Mylonitic) FELSIC METAVOLCANIC | | | | | | | | |
| | | - unit has a well developed, fine scale (1 to 3 mm) somewhat wavy, discontinuous, banded/striped appearance due to shear banding. 50 to 60% chalky white to pinkish buff bands with 40%, thinner, wavy to sinuous, anastomosing to braided medium grey bands (if mylonite, wavy sinuous character of banding a problem) | | | | | | | | |
| | | - unit is soft (weathered) and though probably originally of rhyolitic/rhyodacitic composition like the over and underlying units, this unit has feldspar completely altered to clays (kaolinite??) | | | | | | | | |
| | | - unit is well foliated generally at 0 to 15° to CA | | | | | | | | |
| | | - nonmagnetic | | | | | | | | |
| | | - no recognizable quartz veins occur although these are common in the rhyolites above and below this unit (shearing post quartz veining) | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | - core is relatively incompetent and broken into 1 to 2 cm size rubble fragments along clay lined fractures. Clay coated fractures feel greasy/soapy and locally exhibit fine manganese? dendrites up to 1 cm in size<br><br>- abundant water must flow through this zone at present to cause weathering of feldspar and precipitation of manganese<br><br>- lost water return to surface near end of this zone and hole cemented from top to 97 metres, and then filled with bentonite to 100 metres.<br><br>- upper and lower contacts occur within broken rubble zones. No contacts discernable, but lower contact appears to be a somewhat gradational change from shear foliated felsic rock to recognizable foliated rhyolite. | | | | | | | |
| 99.40 | 118.08 | RHYOLITE (Weakly Sheared to Locally Shear Banded) | 200160 | 110.70 | 112.20 | 1.52 | 5 | 96 | 18 | 530 |
| | | | 200161 | 117.00 | 118.08 | 1.08 | 14 | 16 | 30 | 860 |
| | | - together with overlying Shear Foliated Zone these units form shear zone<br><br>- unit probably previously a rhyolite similar to overlying rhyolites but this section is competent core, unlike overlying weathered mylonite and includes zones of definite feldspar phyric rhyolite within interbanded zones of felsic, quartzose-sericitic schist (sheared rhyolite), and "zebra striped" shear banded rhyolite typical of overlying mylonite unit<br><br>- unit generally mottled to banded, slightly buff to greenish, medium and light grey with some sections that are cut by quartz veining having a light salmon pink colour<br><br>- massive sections tend to be more aphanitic, include minor, 1mm, subhedral, white feldspar phenocrysts, and are slightly more brittly fractured (shattering of more competent unit); shear banded zone consists of light colored rhyolitic bands alternating with thin, anastomosing, dark chloritic bands on 1 to 3 mm scale; and quartz-sericite schists are fine-grained and similar to those in overlying mylonitic sheared rhyolite<br><br>- nonmagnetic, relatively hard unit | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | 99.40 106.35 'zebra striped' shear banded rhyolite<br>- *somewhat irregular, wavy banded*, foliation oriented at various angles to CA from 0 to 70°, with minor, small scale (1 to 2 cm wavelength and amplitude) folds. Foliation averages about 30° CA; no significant fracturing/brecciation as typical in more massive rhyolites<br>- no significant quartz veining or sulphide mineralization | | | | | | | | |
| | | 106.35 113.70 mostly relatively massive rhyolite though locally with hints of weak shear banding in upper part marking the beginnings of 'zebra stripe' development, and locally some weak to moderately foliated schistose zones<br>- section is cut by some *quartz vein/flood/patch zones* that locally occur in fault or small breccia zones, and give these brecciated rhyolite zones a salmon pink colour. Quartz veined/faulted/breccia zones at: 109.50 to 109.85 m, 110.10 to 110.30 m @ 40° CA, 110.45 to 112.20 m @ 45 to 55° CA | | | | | | | | |
| | | 113.70 118.88 well foliated quartz-sericite schist with *foliation orientation* = 20° @ 112.50 m, 55° @ 113.70 m, 65° @ 116.05 m, 40° @ 116.80 m<br>- entire unit contains minor, diffusely bounded, 1 mm to 1 cm, irregular quartz veins throughout, as well as larger concentrations of quartz flooding/patches in the central rhyolitic portion. Central rhyolitic portion is also moderately brittly fractured/brecciated with pale green to white, fine silica to carbonate-sericitic-clay occurring as matrix material in some thin (1-10 mm), irregular brecciated bands, as well as coating many thin (hairline to 1 mm), irregular, networking to anastomosing fracture *systems that are locally intensely* developed giving thin (5 to 10 cm) zones a shattered appearance. The quartz veined/flooded section between 110.45 to 112.40 is intensely fractured with many open fractures (vugs) where original filling material has been weathered out.<br>- lower 0.5 metres contains a few, thin, irregular, though *somewhat foliation parallel, deep hematitic red* blebs (1-3 mm wide and 3 to 20 cm long) that may be boudinaged sections of thin cherty bands. One of these at 117.65 m contains a small bleb of chalcopyrite<br>- generally trace amounts of finely disseminated pyrite along | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|
| | | some late fractures in quartz veined sections, with about 0.5 to 1% in quartz veined zone between 110.70-112.20 m; trace chalcopyrite as noted above ;<br><br>- core relatively competent with 5 to 50 cm breakage along fractures or schistose foliation<br><br>- lower contact sharp bedding contact oriented at 50 to 55° CA. | | | | | | | |
| 118.08 | 123.75 | INTERBEDDED FERRUGINOUS CHERT, CHERTY SEDIMENT AND FELSIC TUFF HORIZONS<br><br>- unit consists of about 10 to 15%, thin (hairline to a few mm) to thicker (1 to 5 cm), dark purplish grey, aphanitic, ferruginous, homogeneous and massive, to well laminated, very magnetic, cherty (BIF) laminae and horizons, in a mostly felsic ash to fine crystal/lapilli tuff sequence. Ferruginous chert horizons form very thin, wavy, pinch & swell horizons in the ash tuff sections, and thicker more uniformly planar bounded bands in the coarser ash/lapilli tuffs<br><br>- bedding & foliation are wavy to irregular, but generally oriented at about 55 to 60° CA; foliation in tuffs locally exhibits small (cm size wavelength & amplitude) scale folding suggesting synform down hole<br><br>- felsic tuff units are medium grey to greenish grey and well laminated to foliated. A few thicker aphanitic "cherty" sections could be chert, ash tuff or rhyolite, but probably not the latter. These more massive, aphanitic zones are well brecciated and contain quartz blebs/patches offset by fracturing<br><br>- ferruginous chert bands are also slightly fractured and locally somewhat brecciated (brittle fracturing)<br><br>118.08 121.10 Interbedded ferruginous chert & felsic tuffs<br><br>121.10 121.35 Small brecciated fault zone at 40° CA (minor displacement)<br><br>121.35 123.05 Felsic crystal tuff with no BIF horizons | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | 123.05 123.75 Felsic ash tuffs and ferruginous chert horizons/laminae<br><br>- entire unit exhibits minor silicification as irregular, white quartz patches/diffuse veins, and as light grey silica filling of thin fractures and brecciated/fractured sections. Quartz veins also occur as irregular pinch & swell veins and lenses that vary from subparallel to crosscutting foliation<br><br>- minor light lime green coloured epidote altered fracturing and matrix filling in small fault/fracture zones (late brittle fracturing)<br><br>- trace amounts of finely disseminated pyrite<br><br>- core relatively competent with 10 to 50 cm breakage along foliation/bedding and fractures<br><br>- lower and upper contacts are bedding contacts of ferruginous chert horizons, but both are poorly recovered. | | | | | | | | |
| 123.75 | 181.90 | MAFIC METAVOLCANIC FLOWS AND/OR TUFFS, WITH ABUNDANT INTERFLOW SEDIMENT HORIZONS<br><br>(Moderately to strongly sheared, and locally a shear breccia)<br><br>- probably a mafic flow sequence with sections of hyaloclastite (although unit could include some mafic tuffs), and several definite interflow sediment/volcaniclastic horizons/bands including some laminated ferruginous chert bands in the sediment sequences<br><br>- mafic flow sections only locally recognizable and unit may include some mafic tuffs/volcaniclastics, but much of these mafics, together with the sediment horizons, are strongly shear foliated making distinction of original protolith difficult. Unit also includes minor felsic tuff horizons and two relatively undeformed mafic dykes (feeder dykes to flow sequence)<br><br>- mafic flows are dark green, chlorite-amphibole-plagioclase | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|

composition, very fine to fine-grained, relatively homogeneous, weak to moderately foliated, very weakly magnetic and locally exhibit a few percent, small (1 to 2 mm), ovoid, white silica filled amygdules. Flows/tuffs generally exhibit minor epidote veining/bands/patches, minor silicification as irregular, wavy, to wormy, small (1 to 3 mm), silica veinlets often with somewhat diffuse vein edges. Vesicles tend to be concentrated in chloritic bands/patches, with possibility they may be porphyroblasts

- much of the less recognizable mafic flows or possibly, mafic tuff/volcaniclastic portions of this unit exhibit strong shear foliation, and include small (1 x 5 mm to somewhat larger) boudinaged? fragments of magnetic ferruginous chert

- interflow sediments have mafic to slightly more felsic or intermediate composition with some biotite content and contain recognizable, though strongly sheared/folded, thin ferruginous chert laminae & horizons. These sedimentary sequences are thinly (1-5mm), irregularly, compositionally banded

- unit also includes two, thin, dyke sections that are unfoliated, homogeneous, even textured and do not exhibit any quartz veining or shear foliation typical of the rest of the unit. Dykes exhibit some biotite in the groundmass, and do not have recognizable chilled margins

123.75 129.35 Vesicular (silica amygdaloidal) mafic flow with weakly developed foliation

129.35 129.60 Thin interflow sediment/tuff horizon; strongly contorted but average bedding/foliation oriented at about 30° CA

129.60 133.30 Mafic dyke. Non-magnetic, relatively homogeneous, very weakly foliated, fine-grained and even textured, contains minor biotite but has mafic plagioclase/chloritized? amphibole composition. Contains no epidote alteration bands or patches. Contains 3% quartz veins, as very planar, subparallel veins at 60° CA (most quartz veining in adjacent flow and tuff/sediment sequences are more irregular though somewhat parallel to shear foliation)

133.30 150.85 Strongly shear foliated, fine-grained, medium to dark green and grey metavolcanic tuff/flow? zone containing

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|---|---|---|---|---|---|---|---|---|---|---|

greater than 50%, thin and thicker sediment horizons including small (in the order of 1-5mm by 3 to 15 mm), irregularly folded, sheared and broken fragments of ferruginous chert laminae/ horizons. Unit is well sheared and was probably mostly mafic tuffs or possibly flows, but now strongly compositionally and shear banded. Locally, biotite is abundant in some compositional bands. Both epidote banding, and quartz in thin lenses to veins, are also strongly shear foliated within unit, generally irregular to often discontinuous in extent, and well folded. Section contains several, thin, ferruginous chert bands up to 10 cm in width, and several, thin, felsic tuff bands locally up to 20 cm thick
- 3% quartz veins and patches, locally with some white calcite
- shear foliation/compositional banding/bedding is highly variable (0 to 50°) & locally irregular and contorted, but on the average is about 25° CA

150.85 153.20 Mafic dyke. Similar to 129.60 to 133.36 m, but with irregular quartz vein patches along 40 cm section at lower contact. Could be late dyke; no apparent foliation, and no chill margins are evident

153.20 181.90 Similar to 133.30-150.85 m. Strongly shear foliated mafic metavolcanic with interbedded sediment/ tuff/ferruginous chert, but locally intensely sheared and irregularly brecciated within chloritized shear zones between 168.8% to 164.00 m and 177.60 to 180.80 m. These two zones have rubbly broken core sections with breakage along polished irregular chloritic slips generally oriented subparallel to to core axis, with some calcite in interstitial voids of brecciation. From 180.00 to 181.90m section is intensely irregularly wavy folded at a small scale (3 to 10 mm wavelength and amplitude) against the felsic contact
- foliation is highly variable (0 to 60° CA); and highly irregular to locally contorted, with average about 30° to CA. Foliation between 170 to 172 metres @ 25° to CA and between 175 to 176 m @ 40° to CA

- entire unit contains only trace amounts of finely disseminated pyrite

- unit relatively unaltered except for normal epidote-carbonate-garnet alteration bands/ patches associated with greenschist metavolcanics in the region, and chlorite slips in chloritic shear

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|---|---|---|---|---|---|---|---|---|---|---|
| | | brecciated zones as noted above | | | | | | | | |
| | | - core is relatively competent with 5 to 50 cm breakage along fractures & shear foliation, except for two rubbly broken shear foliated/brecciated zones where breakage occurs along core subparallel chloritic slips | | | | | | | | |
| | | - lower contact is wavy, irregular, but relatively sharp at 45° CA | | | | | | | | |
| 181.90 | 189.60 | FELSIC AND MAFIC METAVOLCANIC TUFFS WITH INTERBEDDED CHERTY BANDED IRON FORMATION SECTIONS (Strongly broken and contorted) | | | | | | | | |
| | | - irregular mottled, banded and varicoloured, medium to dark shades of grey and green with some felsic sections with pink to purplish shades of medium grey | | | | | | | | |
| | | - unit contains about 10%, thin (1 to 20 cm), maroon to slightly hematitic or purplish dark grey coloured, well laminated, magnetic, ferruginous chert/cherty banded iron formation (BIF). These are mostly planar banded with orientations at 30 to 50° CA, although upper quartz veined section of unit contains a few strongly broken, discontinuous & contorted fragments/blocks of ferruginous chert | | | | | | | | |
| | | 181.90 182.90 Intensely quartz flooded/veined zone of aphanitic felsic metavolcanic and ferruginous chert bands. Sharp but folded, lower contact at ± 20° CA | | | | | | | | |
| | | 182.90 183.60 Well foliated mafic metavolcanic with foliation at 30 to 45° CA | | | | | | | | |
| | | 183.60 185.60 Well foliated mafic metavolcanic tuff with several thin, wavy banded, ferruginous chert laminae/horizons about 3 to 20 mm thick | | | | | | | | |
| | | 185.60 189.60 Strongly contorted felsic metavolcanic tuff and ferruginous chert with local swirled foliation and abundant, foliation parallel to irregular, blebs of quartz | | | | | | | | |
| | | - entire unit exhibits variable foliation of 0 to 70° CA with 35-50° most common, although many sections throughout are somewhat subparallel over short distances. More often foliation is irregular and locally swirled | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | WIDTH | ASSAYS Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | - local fracturing particularly in lower felsic zone clearly shows BIF horizons broken and offset on fractures, suggesting tectonic brecciation/faulting of unit | | | | | | | | |
| | | - unit has about 5% quartz veining as thin, to generally larger (mm to several cm) blebs, patches and wormy foliation sub-parallel veins that are locally contorted and irregular. Quartz locally has diffuse contacts with wallrock, and in other places sharp fracture contacts. Quartz veining often contains minor amounts of salmon pink coloured altered wallrock fragments | | | | | | | | |
| | | - minor epidote alteration of mafics. Sheared and fractured rhyolites are weakly sericitized | | | | | | | | |
| | | - no significant sulphide mineralization (trace finely disseminated pyrite) | | | | | | | | |
| | | - relatively competent core with 5 to 25 cm breakage on fractures, and parallel to both foliation and BIF bedding | | | | | | | | |
| | | - lower contact is very irregular, transitional change from felsic to highly contorted mafics. | | | | | | | | |
| 189.60 | 199.20 | FELSIC/MAFIC METAVOLCANIC (Moderately Chloritic & Moderately Pervasively Silicified) | 200162 | 189.60 | 191.00 | 1.40 | 42 | 20 | 84 | 590 |
| | | | 200163 | 191.00 | 193.00 | 2.00 | 41 | 8 | 82 | 350 |
| | | | 200164 | 193.00 | 194.50 | 1.50 | 42 | 4 | 76 | 370 |
| | | | 200165 | 194.50 | 195.50 | 1.00 | 58 | 4 | 72 | 470 |
| | | 189.60 194.50 dark green-black, very fine grained, moderately magnetic, moderately hard, relatively homogeneous, chloritized & silicified? felsic metavolcanic tuffs or silicified, chloritic mafic metavolcanic tuffs | 200166 | 195.50 | 196.50 | 1.00 | 73 | 2 | 54 | 350 |
| | | | 200167 | 196.50 | 198.00 | 1.50 | 192 | 44 | 44 | 240 |
| | | | 200168 | 198.00 | 199.20 | 1.20 | 119 | 70 | 50 | 170 |
| | | - section is massive to weakly wavy foliated at about 40 to 45° CA | | | | | | | | |
| | | - section appears to be a silicified mafic metavolcanic because of colour, fine-grained, homogenous texture and magnetism, however, it lacks any epidote alteration, and where foliation and bedding? (compositional banding) somewhat evident, the section exhibits a weak banded felsic appearance | | | | | | | | |
| | | - composition is probably quartz-feldspar-chlorite and magnetite, Probably addition of silica, Fe and Mg as section is very | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | WIDTH | ASSAYS Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | chloritic<br><br>- section contains 5%, thin (1-3 mm), discontinuous, irregularly folded wisps and bands of grey silica locally looking like patchy silicification, and locally looking like dismembered veins/flooding oriented at all angles at core axis, but often somewhat foliation parallel<br><br>- section exhibits some chloritic slip surfaces at various angles to core axis<br><br>- minor to 1%, finely disseminated pyrite, and possibly pyrrhotite (unit magnetic)<br><br>- relatively competent core, but 5 to 25 cm breakage on a few chloritic slips and other fractures<br><br>194.50 196.50 Mafic Metavolcanic (Silicified)<br>- similar to above (189.60-194.50 m) but more brecciated in appearance, contains more irregular, discontinuous wispy silica veinlets/lenses, and locally, massive sections appear to be mafic in composition, locally having slight epidote green colour<br><br>- generally dark green-grey, fine-grained, magnetic, relatively homogeneous with 10 to 20%, irregular to cuspid, discontinuous, wavy patches to coelesing networkings of mostly foliation subparallel, grey quartz/silica veining/pervasive flooding<br><br>- unit is silicified by patchy quartz "vein" flooding, but does not contain any discrete cross-cutting quartz veins<br><br>- unit appears somewhat contorted and no foliation orientation is discernable<br><br>- minor to 0.5% fine disseminated pyrite & pyrrhotite<br><br>- relatively competent core with 10 to 20 cm breakage on fractures<br><br>196.50 199.20 Felsic Metavolcanic (sheared, fault zone)<br>- intensely contorted and sheared section that was probably felsic metavolcanic tuffs. This section contains much more silica lenses/patches than overlying more mafic tuffs/flows in | | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH | Cu (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| | | this unit | | | | | | | |
| | | - dark green-grey to grey, very fine grained, non- to weakly magnetic, and locally exhibiting well laminated/banded felsic schistose appearance, similar to quartz-sericite schists although much of this unit is very chloritic | | | | | | | |
| | | - silica-plagioclase-chlorite composition with chlorite an alteration product due to addition of Fe & Mg to original, more felsic composition | | | | | | | |
| | | - 1%, finely disseminated pyrite often concentrated along fractures | | | | | | | |
| | | - 15 to 20%, irregular, discontinuous grey silica bands, blebs and coelescing patches partly appearing to be due to silicification/veining, and partly due to metamorphic banding in schistose zones. All of the quartz banding is offset and broken due to tectonism. Unit is moderately to strongly sheared and brecciated with no foliation orientation obtainable. Broken breccia fragments 3 to 5 mm in size | | | | | | | |
| | | - minor calcite forms in vugs and fractures | | | | | | | |
| | | - shearing of slips offsetting lithology oriented between 0 and 40° CA | | | | | | | |
| | | - 1 to 2%, finely disseminated pyrite concentrated along shear fractures | | | | | | | |
| | | - no late crosscutting quartz | | | | | | | |
| | | - core relatively broken with 1 to 25 cm breakage along chloritic shear/slip surfaces mostly subparallel to core axis | | | | | | | |
| | | - contacts between above sections in unit somewhat gradational due to irregularly sheared contact zones. | | | | | | | |
| | | - lower contact with underlying mafic metavolcanic oriented at about 40° CA. | | | | | | | |
| 199.20 | 221.70 | MASSIVE MAFIC METAVOLCANIC (Roberts Arm Dyke?) | 200169 | 199.20 | 201.00 | 1.80 | 59 | TRACE | 42 | 400 |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| | | - dark green-black, very fine grained to coarsely porphyroblastic, relatively soft, weak to strongly magnetic, moderately well developed planar foliation generally at 45° to CA | | | | | | | |
| | | - grain size varies from fine-grained, in the more siliceous/silicified upper part, to coarse-grained (up to 2 to 3 mm) in the central part, to fine-grained in the lower part | | | | | | | |
| | | - unit has a mafic composition consisting of plagioclase-chlorite & amphibole with amphibole forming large porphyroblasts through central section. These could be anthophyllite. Locally minor amounts of calcite fills some of the interstitial spaces between porphyroblasts. Middle and lower sections exhibit minor patchy epidote ± pink garnet alteration throughout, particularly adjacent to thin calcite veinlets. Locally, large (1 to 10 mm), irregular coarse-grained, white, calcite patches occur with the epidote ± garnet altered patches. These form 5% of rock | | | | | | | |
| | | - unit probably a metavolcanic feeder dyke to overlying mafic flows, but possibly metamorphosed massive flow | | | | | | | |
| | | 199.20 201.00 Dark green-black, relatively fine-grained, chloritic, slightly silicified or hornfelsed, homogeneous, weakly foliated mafic metavolcanic | | | | | | | |
| | | 201.00 217.00 Dark grey-green, medium to coarsely amphibole porphyroblastic; well developed planar foliation at 45° CA | | | | | | | |
| | | 217.00 221.70 Fine-grained, green-grey, planar foliated mafic metavolcanic | | | | | | | |
| | | All three zones above are gradational into one another | | | | | | | |
| | | - unit contains no quartz veining | | | | | | | |
| | | - very minor, finely disseminated pyrite mostly occurring in upper section | | | | | | | |
| | | - competent core, with 25 to 100 cm breakage generally along fractures at 25 to 75° CA or along foliation | | | | | | | |
| | | - lower contact is bedding surface, parallel to schistosity at 35° CA. | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ag (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 221.70 | 224.05 | MAFIC METAVOLCANIC FLOW (Minor Magnetite Bands)<br>- dark green, moderately to locally extremely magnetic, weak to moderately schistose, fine-grained<br>- has plagioclase-amphibole-minor biotite and magnetite composition, but includes numerous thin (hairline to 2 mm), foliation subparallel, magnetite bands/veinlets (extremely magnetic)<br>-slightly wavy planar foliation at 30 to 40° CA<br>- unit is mafic flow with upper contact zone a 10 cm wide interflow sediment horizon<br>- moderate amount of small (0.5-2 cm), irregular, somewhat foliation subparallel epidote-silica altered patches<br>- no significant veining<br>- no visible sulphide mineralization although abundant magnetite in thin seams/veinlets/bands<br>- lower contact sharp bedding surface oriented at 45° CA. | 200170 | 222.00 | 224.05 | 2.05 | 77 | 2 | 60 | 238 |
| 224.05 | 236.60 | FERRUGINOUS CHERT WITH MINOR FELSIC METAVOLCANIC TUFF HORIZONS<br>- approximately 50%, slightly reddish (wine) grey to hematitic red, aphanitic, weak to moderately magnetic, finely laminated cherty iron formation horizons, and 50% thinly (1-20 mm) interbedded grey chert and felsic tuff horizons<br>- red ferruginous chert is well laminated and banded at 30 to 65° CA with most about 40° CA; section exhibits at least 2 tight fold enclosures (similar tight folding as at Pumphouse outcrop). BIF bands are ferruginous cherty argillite to argillaceous chert; hard, aphanitic, weak to moderately magnetic; forms thin laminae interbedded with ash tuffs or chert bands up to ± 50 cm wide; chert band contacts are planar, while thinner laminae are often wavy foliated<br>- chert bands contain 5 to 20% planar, mostly foliation sub- | | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



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

parallel to crisscrossing quartz veining which often end at chert contacts although some thicker (> 3 mm) veins continue as thinner bands into adjacent tuffs

- interbedded medium grey to green-grey chert and felsic tuff (now qtz-sericite schist) horizons with about 50% of each as thin (1 mm) to thicker (10 to 15 cm) interbeds. Bedding contacts are wavy planar and parallel to foliation at 35 to 55° CA

- some thinner (1 to 10 mm) cherty bands have a silica vein/band appearance

224.05 224.25 *Grey chert band*

224.25 225.85 Felsic tuffs with minor red ferruginous chert laminae @ 35 to 40° CA

225.05 226.00 Interbedded red ferruginous chert and felsic tuff bands

226.60 227.60 Grey slightly ferruginous laminated chert

227.60 228.95 Interbanded/bedded grey chert/qtz veins and felsic tuffs

228.95 229.12 Red ferruginous chert band

229.12 229.28 Felsic tuff with 5%, small cordierite porphyroblasts

229.28 229.50 *Red ferruginous chert band*

229.50 229.75 Same as 229.12 to 229.28

229.75 230.60 Red ferruginous chert

- entire unit exhibits moderate qtz-sericite-chlorite alteration of felsic metavolcanics, and locally 229.12-229.28 m & 229.50 to 229.75 exhibits 5%, small (1-3 mm), ovoid to foliation parallel elongate, dark coloured cordierite porphyroblasts. Note: first appearance of cordierite porphyroblasts in hole

- wavy foliation banding and folded bedding suggest synform

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | axis downhole<br><br>- unit is moderately broken with recovery as 1 to 10 cm pieces, although a few much longer pieces and some short (5 to 10 cm) rubbly broken sections. Most breakage along fractures and slips parallel to foliation<br><br>- lower contact sharp planar bedding surface | | | | | | | | |
| 238.60 | 242.50 | INTERBEDDED GREY LAMINATED CHERT, FELSIC TUFFS (foliated & sheared) AND MINOR MAFIC TUFFS (intensely chloritized felsic tuffs?)<br><br>- unit consists of several thin to thicker interbedded zones as follows:<br><br>238.60 238.90 Interbedded, fine-grained, grey-green felsic tuff and thin (1-10 mm), ferruginous, cherty horizons at 30 to 35° CA; felsics are quartz-sericite-chlorite, weakly schistose with wavy foliation and minor (1 cm wavelength and amplitude) folds showing synform downhole. No sulphides<br><br>238.90 232.65 Fine-grained, medium grey-green well laminated/banded qtz-sericite/chlorite (felsic metavolcanic protolith now well sheared/schistose) schist; well developed wavy banded foliation @ 45° CA, but variable and folded. Contains about 10 - 15%, large (5 to 7 mm long) ovoid, darker green cordierite porphyroblasts with long axis somewhat randomly oriented. Cordierite appears to be later than major deformation (overprints schistosity). Cordierite concentrated near upper part of section and more vague/diffuse and much less abundant in lower part. No sulphides<br><br>232.65 233.45 Aphanitic to very fine grained, medium greenish-grey, locally weakly wavy laminated similar to above, but mostly more massive and cut by 15 to 20%, 1 to 10 mm, criss-crossing, subplanar, vague/diffusely bounded opaque greyish white quartz veining (has appearance of rhyolite protolith). Minor coarse (1 mm) pyrite cubes. No cordierite<br><br>233.45 235.00 Similar to 230.90-232.65 m, with wavy foliation more contorted and irregular, but generally averaging 45° CA. 10 to 15%, large (5-10 mm), cordierite porphyroblasts over- | 200171 | 239.00 | 240.50 | 1.50 | 53 | 2 | 264 | 198 |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | WIDTH | ASSAYS Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | printing schistosity although many have an internal foliation at angles to main foliation suggesting rotation of porphyroblasts during deformation. Section contains 1 to 2% coarsely crystalline pyrite | | | | | | | | |
| | | 235.00 242.50 Finely interbedded cherty argillite, ferruginous chert and felsic tuff/volcaniclastic horizons<br>- unit has sedimentary character, but beds are well foliated (subparallel to bedding) and somewhat sheared<br>- beds generally a few mm to a few cm in width, with planar to wavy planar contacts<br>- beds are locally graded (mostly younging uphole) and are often well laminated, however fold reversals are visible in the core showing grading with the opposite younging direction<br>- most minor fold structures suggest synform downhole<br>- BIF (cherty) horizons are very fine-grained, well laminated, generally weak to strongly magnetic<br>- unit has some irregular chlorite ± garnet bands and locally contains minor cordierite porphyroblasts<br>- minor pyrite as fine disseminations in upper part of section increasing to 5 to 20%, locally concentrated in zones (1 to 10 cm wide) containing abundant (10 to 30%) heavily disseminated coarse pyrite<br>- pyrite also occurs within thin (1 to 10 mm), irregular chlorite ± garnet bands that parallel foliation<br>- foliation variable between 30 to 65° to CA, but averages ≈ 45° CA | | | | | | | | |
| | | - generally, the above units exhibit weak to moderately well developed chloritic alteration, with more schistose zones containing coarse (cm size) cordierite (dalmation rock)<br>- unit contains first major cordierite development and first abundant pyritic development in this drill hole | | | | | | | | |
| | | - very minor quartz veining or fracturing apart from qtz veins in more massive felsic section between 232.65-233.45 m | | | | | | | | |
| | | - generally well broken core (5 to 20 cm) with numerous more broken rubble zones. Most breakage at ≈ 45° CA, parallel to sericitic/chloritic foliation | | | | | | | | |
| | | - lower contact is sharp at 45° CA along bottom of last recognizable BIF (cherty argillite/ferruginous chert) horizon. | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 242.50 | 258.45 | CORDIERITE PORPHYROBLASTIC, QUARTZ-SERICITE-CHLORITE SCHIST (Felsic Metavolcanic/Dalmation Rock) : | 200172 | 240.50 | 242.50 | 2.00 | 190 | 4 | 1830 | 70 |
| | | | 200173 | 242.50 | 244.00 | 1.50 | TRACE | 20 | 180 | 1820 |
| | | | 200174 | 244.00 | 245.00 | 1.00 | 45 | 24 | 230 | 300 |
| | | | 200175 | 245.00 | 246.00 | 1.00 | 34 | 4 | 154 | 1550 |
| | | | 200176 | 246.00 | 248.00 | 2.00 | 14 | TRACE | 142 | 1520 |
| | | | 200177 | 248.00 | 250.00 | 2.00 | 15 | 2 | 152 | 1100 |
| | | | 200178 | 250.00 | 251.50 | 1.50 | 1 | TRACE | 94 | 1860 |
| | | | 200179 | 251.50 | 252.00 | 0.50 | 1530 | TRACE | 632 | 540 |
| | | | 200180 | 252.00 | 254.00 | 2.00 | 127 | TRACE | 156 | 1080 |
| | | | 200181 | 254.00 | 256.20 | 2.20 | 22 | TRACE | 56 | 1140 |
| | | | 200182 | 256.20 | 258.45 | 2.25 | 4 | TRACE | 68 | 1160 |

- mottled to laminated/banded, light to medium purplish to greenish to brownish greys, fine-grained, wavy laminated felsic rock with quartz-feldspar-sericite-chlorite groundmass composition. Unit generally exhibits 20 to 40% large (5-15 mm), ovoid, somewhat poikioblastic, darker grey-green chloritized cordierite porphyroblasts

- locally the cordierite porphyroblasts appear to overgrow foliation, but in most places they appear bent and folded by foliation

- unit exhibits strong Fe/Mg alteration

- broken surfaces exhibit foliated chloritic ± sericitic composition and have greasy feel. Probably 30-45% chlorite + sericite ± biotite? (reddish micaceous mineral)

- unit has well developed schistose/wavy foliation oriented at various angles to core axis. Average foliation orientation about 45° to CA. Unit appears well sheared, locally containing broken quartz fragments in schistose matrix

- moderately soft, generally non-magnetic, except for cpy/po section between 251.50 to 252.00 m which is strongly magnetic

- unit generally contains 1 to 3%, coarsely (1-3 mm) disseminated pyrite, concentrated in small (1 to 3 cm) patches or foliation subparallel bands, but includes a thin (1 m) zone between 244.00 to 245.00 m with 20%. fine to coarsely disseminated pyrite, and one zone (251.50 to 252.00 m) with 3 to 4% coarse pyrrhotite surrounded by 2% cpy in small (1-10 mm) irregular patches and thin, irregular veinlets. Chalcopyrite appears to be remobilized

- no late or planar quartz veining, but unit contains 3-5% irregular quartzose spots, blebs and patches

- core relatively competent with 5 to 50 cm breakage along chloritic/sericitic foliation surfaces

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | - lower contact, sharp, planar foliation/bedding surface at 48° CA | | | | | | | | |
| 258.45 | 303.75 | FELSIC METAVOLCANIC QUARTZ-FELDSPAR, CRYSTAL/FINE LAPILLI TUFF (probably Grit Unit of Mine) | 200183 | 258.45 | 260.00 | 1.55 | 2 | TRACE | 46 | 140 |
| | | | 200184 | 260.00 | 261.50 | 1.50 | 14 | TRACE | 64 | 250 |
| | | | 200185 | 267.30 | 268.80 | 1.50 | 77 | 8 | 34 | 340 |
| | | - medium slightly bluish to greenish or brownish speckled grey, fine to medium-grained (0.5-1 mm), moderately well developed relatively planar foliation. Unit is very homogenous in appearance, non-magnetic, moderately hard. Local brownish colour due to minor biotite (Zn-rich?) | 200186 | 270.30 | 271.80 | 1.50 | TRACE | 2 | 20 | 240 |
| | | | 200187 | 271.80 | 273.30 | 1.50 | TRACE | 4 | 20 | 250 |
| | | | 200188 | 277.70 | 279.10 | 1.40 | TRACE | TRACE | 28 | 310 |
| | | | 200189 | 279.10 | 280.60 | 1.50 | TRACE | TRACE | 18 | 320 |
| | | | 200190 | 283.50 | 284.90 | 1.40 | TRACE | TRACE | 14 | 170 |
| | | | 200191 | 289.00 | 290.30 | 1.30 | TRACE | TRACE | 14 | 110 |
| | | | 200192 | 294.55 | 295.90 | 1.35 | TRACE | TRACE | 14 | 190 |
| | | | 200193 | 295.90 | 296.35 | 0.45 | TRACE | 2 | 14 | 200 |
| | | | 200194 | 301.90 | 303.75 | 1.85 | TRACE | TRACE | 18 | 300 |
| | | - 3 to 10%, subrounded, small (0.5 to 1.5 mm) blue quartz eyes; about 60-65% quartzose-feldspathic-sericitic lithic felsic metavolcanic lapilli fragments of ≤2mm; feldspar crystals occur with/forming part of lapilli fragments and occur as isolated crystals in finer matrix; about 15-20% slightly brownish (biotitic) schistose interstitial matrix material, occurring as wispy discontinuous foliation subparallel blebs & bands; 3 to 6% disseminated pyrite | | | | | | | | |
| | | - quartzose-feldspathic-sericitic material forms separate recognizable small grains & fragments, but most form schistose matrix material. Between 179.5 and 281 m are several thin (1 to 3 mm, by 1 to 5 cm), sheared, more mafic fragments of larger lapilli. These are oriented parallel to foliation and are well sheared. Local fragments suggest part of unit may be coarser lapilli tuff | | | | | | | | |
| | | - unit has weak to locally moderately sheared appearance, with recognizable felsic tuff protolith (unlike overlying unit which is much more sheared with strong tectonic fabric) | | | | | | | | |
| | | - unit exhibits weak development of partial (poikioblastic) cordierite porphyroblasts. These are 3 to 5 mm in size, slightly darker in colour than rest of unit, and are more common (better developed) in upper section between 258.45 to 260.60 m, although locally visible throughout. | | | | | | | | |
| | | - schistose foliation is moderately well developed throughout unit, is relatively planar and consistent at about 45° to CA, although varying between ± 30 and 50° CA | | | | | | | | |
| | | - central part of unit between 281 and 290.5 m contains some | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GR-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ag (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | more massive? quartz veined sections where crystal tuff texture is somewhat less recognizable. Locally, this zone contains more (5-10%) disseminated pyrite | | | | | | | | |
| | | - unit is moderately well quartz veined, with about 5%, thin (1-10mm), irregular patches & blebs to somewhat planar lenses & veins of coarse milky white, relatively clean quartz. Between 281 and 290.5 m unit has patchy silica flooded, irregular veined character with 20-30% silica mottling. Quartz appears to be silica sweats from within unit during metamorphism/deformation. Quartz bands/veins typically have somewhat diffuse edges. Quartz veins/lenses generally crosscut foliation, whereas some larger quartzose bands are subparallel to foliation. Veining is clean and contains no sulphide mineralization. | | | | | | | | |
| | | - unit contains 3 to 6%, finely (<1 mm) disseminated pyrite, generally as isolated individual crystals, but locally forming disseminated concentrations up to 10-50% over thin (1-5 cm) zones or patches, particularly in quartz flood zone between 281 and 290.5m; pyrite is generally remarkably evenly disseminated throughout crystal tuff unit | | | | | | | | |
| | | - soft weathered zone between 262.50 to 262.60 m may be small fault/shear | | | | | | | | |
| | | - relatively competent core with 5 to 50 cm breakage, mostly on fractures across foliation, but includes a few, thin (10-50 cm), rubbly broken zones due to fracturing along core axis | | | | | | | | |
| | | - lower contact relatively sharp and planar at 50° CA. | | | | | | | | |
| 303.75 | 315.65 | FELSIC QUARTZ-FELDSPAR CRYSTAL TUFFS & INTERBEDDED FELSIC ASH TUFF/FLOWBANDED RHYOLITE | 200195 | 304.80 | 306.10 | 1.30 | TRACE | TRACE | 20 | 200 |
| | | | 200196 | 306.10 | 307.25 | 1.15 | TRACE | TRACE | 20 | 610 |
| | | | 200197 | 307.25 | 309.10 | 1.85 | TRACE | TRACE | 12 | 520 |
| | | | 200198 | 309.10 | 310.40 | 1.30 | TRACE | TRACE | 26 | 380 |
| | | | 200199 | 310.40 | 311.75 | 1.35 | TRACE | TRACE | 14 | 480 |
| | | | 200200 | 311.75 | 313.05 | 1.30 | TRACE | TRACE | 30 | 730 |
| | | | 200201 | 313.05 | 313.35 | 0.30 | 1 | 20 | 72 | 120 |
| | | | 200202 | 313.35 | 314.40 | 1.05 | TRACE | TRACE | 44 | 480 |
| | | 303.75 304.80 Medium grey, very fine grained, massive to weakly schistose, quartz-feldspar-sercite rock; non-magnetic, relatively hard; appears to be fine ash tuff; weak foliation at ± 45° CA; minor irregular quartz veining/lenses/flooding; minor very fine disseminated pyrite, and one, thin (2 mm), disseminated pyrite band near lower contact | | | | | | | | |
| | | - section is siliceous (silicified?), weakly sericitic and locally exhibits a few bands with cordierite porphyroblasts | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | WIDTH | ASSAYS Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 304.80 306.10 Felsic metavolcanic quartz-feldspar crystal/fine lapilli tuff<br>- same as most of 258.45-303.75 m, except fewer (2-5%) blue quartz eyes, more 1-3 mm feldspar phenocrysts/crystals; foliation @ 50° CA. Weak to moderate sericite & weak pervasive silica? alteration | | | | | | | | |
| | | 306.10 309.10 Similar to 303.75-304.80 m<br>- medium grey, weakly schistose, very fine grained felsic quartz-feldspar-sericite composition locally with a few, thin (1-3 cm) crystal tuff bands as above. Protolith probably a felsic ash tuff<br>- section is non-magnetic, relatively hard, siliceous and weak to moderately sericitic; minor cordierite in some thinner more schistose bands; foliation at 48-50° CA<br>- 1-3% coarse (1-2 mm) disseminated pyrite crystals<br>- locally moderately well developed wavy schistose foliation with rock similar to cordierite porphyrobiastic schist between 242.50 and 258.45 m<br>- section has minor quartz veining above 307.25 m, but is intensely (30-50%) silica flooded below 307.25 m with irregular patches & discontinuous lenses and veins of 2 to 15 mm wide white quartz. Quartz has diffuse contacts and contains partially assimilated wall-rock fragments | | | | | | | | |
| | | 309.10 310.40 Felsic metavolcanic quartz-feldspar crystal/fine lapilli tuff; same as 304.80-306.10 m; 3-5% coarsely disseminated pyrite. | | | | | | | | |
| | | 310.40 315.65 Cordierite porphyroblastic quartz-feldspar-sericite schist with minor chert/ash tuff bands (moderately sheared section); 3-5% coarsely disseminated pyrite<br>- most of unit is cordierite porphyroblastic quartz-sericite-chlorite schist similar to 242.50-258.45 m with zones containing up to 50%, large (3-10 mm), ovoid, poikioblastic cordieritic porphyroblasts, interbanded with zones of less altered quartz-feldspar-crystal tuff<br>- unit is generally medium greenish to brownish grey, fine grained, non-magnetic. Unit has fine crystal tuff appearance, but strong shear foliation generally overprints any original bedding, except for cherty horizons between 309.60 to 310.40 m and 314.40 to 315.20 m. | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | - schistose zones are wavy, planar foliated at 40-45° CA with abundant sericite/chlorite slip surfaces, all with downhole sub-parallel slickensides. Minor irregular; non-planar foliation/ slip surfaces, particularly in lower part of unit closer to the fault gouge. Unit has a weak to moderately shear foliated appearance<br><br>- moderate sericitic and weak chloritic alteration, with moderate cordierite porphyroblast development<br><br>- 3 to 10% disseminated pyrite, locally concentrated (30%) in thin, finely disseminated bands (2-5 mm wide)<br><br>- although core is relatively hard and competent, it is moderately broken with 3-10 cm breakage along fractures and sericitic/chloritic foliation<br><br>- lower contact transitional into fault gouge. | | | | | | | | |
| 315.65 | 315.80 | FAULT GOUGE | 200203 | 314.40 | 315.78 | 1.38 | 1 | 20 | 48 | 170 |
| | | - incompetent clay fault gouge, including abundant, <3 mm, sheared rubble fragments<br>- fault gouge is transitional over a few cm into more competent shear brecciated felsic metavolcanics to both sides<br>- major slips = 60-70° CA. | | | | | | | | |
| 315.80 | 323.85 | WEAK TO INTENSELY SHEARED, CHLORITIC FELSIC AND MAFIC METAVOLCANICS | 200204 | 320.90 | 323.15 | 2.25 | 10 | 36 | 62 | 400 |
| | | 315.80 316.30 Medium to dark grey, finely laminated, schistose, moderately sheared, very chloritic felsic meta-volcanic similar to overlying schistose tuffs; no cordierite porphyroblasts or quartz veining; foliation & pyrite banding at = 45° CA; 2-4% disseminated, foliation parallel pyrite, locally in thin laminae/bands<br>- includes thin (10 cm), fault breccia band at 50° to CA and = some brecciated qtz vein fragments<br>- relatively broken with 1-5 cm breakage on fractures<br>- lower contact sharp shear/fault surface at 70° CA<br><br>316.30 317.55 Dark grey-green mafic (chloritic) metavolcanic | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | ASSAYS FROM | TO | WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | flow?; typical fine-grained, massive to very weakly schistose, with minor (2-3%),irregular, light green epidote-carbonate-garnet alteration veining/banding. Section has plagioclase-amphibole-chlorite composition with numerous, irregular, wavy chlorite slips at 30-35° CA. Foliation irregular, but averages about 50° CA; section has weak to moderate pervasive silicified appearance, is moderately hard, non- to very weakly magnetic, and relatively homogeneous. Minor, thin (1-5 mm), irregular quartz veins/lenses; 2-3% foliation parallel pyrite blebs. Well broken (1-5cm) core pieces often broken along chloritic slip surfaces<br>- lower contact not recovered intact (broken rubbly core) | | | | | | | | |
| | | 317.55 318.35 Cordierite porphyroblastic quartz-sericite-chlorite schist. Protolith probably a felsic metavolcanic crystal /fine lapilli tuff. Medium greenish grey with 20%, small (3-4 mm), ovoid, but vague (poikioblastic) and somewhat folded cordierite porphyroblasts, in well foliated matrix, containing abundant, small (0.5 mm) feldspar crystals. Foliation oriented at 50° CA; minor quartz veining; non-magnetic; trace very finely disseminated pyrite. Moderately competent core with 5-15 cm breakage along fractures; lower contact shear slip at 60° CA | | | | | | | | |
| | | 318.35 318.70 Shear/Fault Zone<br>- zone of sheared chloritic mafic volcanic bands at 40° CA, and intensely shear foliated, to rubble fault brecciated, felsic metavolcanics. No qtz veining, and minor disseminated py. Well broken rubbly core with (1 to 5 cm breakage. Lower contact fault breccia at 60° CA | | | | | | | | |
| | | 318.70 320.45 Mafic Metavolcanic Flow? or Chloritized Felsic Tuff<br>- similar to 316.30-317.55 m, but this section is more silicified and has medium to dark greyish green to slightly reddish grey colour; reddish colour due to fine (Zn-rich?) biotite? locally replacing chlorite in some zones; weak foliation @ about 45° CA<br>- 3-5%, irregular to anastomosing, thin (1-5 mm) epidote-carbonate-garnet alteration veinlets/bands, locally concentrated around irregular, coarse white calcite or quartz lenses/blebs<br>- non-magnetic to very weakly magnetic<br>- 1% very finely disseminated pyrite | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | WIDTH | ASSAYS Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | - transitional lower contact, with wavy planar foliation oriented at 35-40° CA | | | | | | | | |
| | | 320.45 328.90 Shear foliated felsic metavolcanic with remnant zones exhibiting quartz-feldspar crystal/fine lapilli tuff texture<br>- now mostly quartz-feldspar-sericite-biotite±chlorite schist with irregular wavy foliation<br>- includes some irregular quartz veins and leases (diffusely bounded)<br>- 1% very finely disseminated pyrite; moderately competent core with 5 cm breakage<br>- lower contact sharp but undulating/irregular at 60° CA | | | | | | | | |
| | | 328.90 321.15 Shear Foliated Felsic Metavolcanic (Ash Tuffs)<br>- transitional from massive, grey, feldspar phyric rhyolite with minor quartz-feldspar-sericite schist laminae/bands (320.90-321.25 m), through well sheared foliated quartz-feldspar-sericite-chlorite schist with slightly wavy foliation oriented at ± 45° CA (321.25 - 321.70 m), through more mafic looking siliceous-feldspar-biotite schist (321.70 - 321.90 m), to intensely shear foliated quartz-sericite schist containing 10-15%, thin (1-3 mm), elongate (3-10 mm), sheared quartz blebs parallel to wavy shear foliation @ 55° CA. Minor folds (1 cm wavelength & amplitude) indicate synform downhole. Quartz blebs are probably sheared/boudinaged remnants of previous quartz veins<br>- these sections have shear foliated contacts parallel to foliation at 40-60° CA; non-magnetic, slight epidote alteration, minor to 2% finely disseminated pyrite<br>- no cordierite apparent<br>- lower contact sheared foliation contact at 75° CA | | | | | | | | |
| | | 321.15 321.85 Bubbly recovered, fractured mafic and felsic metavolcanics with chlorite slips. Minor disseminated sulphides<br>- lower contact sharp chlorite slip at 75° CA. | | | | | | | | |
| 321.85 | 343.20 | SHEAR FOLIATED CHLORITE-PLAGIOCLASE MAFIC ROCK (Intensely Fe/Mg altered/chloritized)<br><br>- very homogeneous composition; dark wavy (chloritic) green-black, relatively soft, strongly magnetic, fine to medium-grained with about 40% sericitized/altered plagioclase, 50% | 200205 | 328.00 | 329.40 | 1.40 | 31 | TRACE | 60 | TRACE |
| | | | 200206 | 333.10 | 334.60 | 1.50 | 34 | 40 | 192 | TRACE |
| | | | 200207 | 334.60 | 336.20 | 1.60 | 29 | TRACE | 86 | TRACE |
| | | | 200208 | 339.00 | 340.00 | 1.00 | 112 | TRACE | 112 | TRACE |
| | | | 200209 | 340.00 | 341.50 | 1.50 | 231 | TRACE | 138 | 10 |
| | | | 200210 | 341.50 | 342.10 | 0.60 | 3250 | TRACE | 192 | 10 |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | ASSAYS SAMPLE No. | FROM | TO | WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | chlorite & minor to a few percent, sericite, magnetite, epidote. Locally 0.1-2 mm magnetite grains disseminated throughout unit<br>;<br>- protolith probably a mafic metavolcanic, but entire unit intensely altered and no unaltered remnant zones left<br>- below 339 m unit is slightly less chloritic, and 0.5-1 mm subhedral plagioclase phenocrysts more recognizable, suggesting mafic metavolcanic protolith<br><br>- unit has weak to moderately well developed wavy to planar chloritic foliation varying from 10-60° CA with most about 40°. Unit also has abundant chloritic slips that are curved planar surfaces oriented at all angles to CA, and these often coelesce or ride up or out of one another; these slip surfaces are waxy green and locally look weakly serpentinized. All slip surfaces exhibit well developed slickensides<br><br>- locally, foliation is extremely contorted & swirled across short distances<br><br>- several fractures/slips have minor, coarse, white calcite lenses/veins and these are locally offset by shear slips<br><br>- unit contains no quartz veining<br><br>- unit generally contains minor to 0.5% finely disseminated pyrrhotite, but near end of section contains a few percent po ± minor cpy in thin foliation subparallel bands as follows:<br><br>341.60 - 341.65 3 cm wide sulphide band at 40° CA, pinching out downhole on chloritized slip surface @ 65° CA, containing 50% finely disseminated and locally a few coarser (1-2 mm) rounded blebs of pyrrhotite, and 5-10% chalcopyrite which appears to be replacing the pyrrhotite.<br><br>341.70 - 341.85 3 cm wide sulphide band at 25° CA. Same as above which could be offset of same band. 50% heavily disseminated pyrrhotite blebs as fine (.1-.5) rounded grains, and some coarse (1-3mm) blebs. The latter have some associated chalcopyrite which forms about 5% of band<br><br>341.95 - 342.00 3 cm sulphide band at 45° CA, cut off by chloritic slip. Same band as above but offset on slip | 250211 | 342.10 | 343.20 | 1.10 | 192 | TRACE | 128 | TRACE |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 342.58 - 342.66 thin (1-3 mm), discontinuous sulphide (po, cpy) veinlet @ 30° CA | | | | | | | | |
| | | - 5 to 20 cm zones adjacent to the above sulphide bands contain more concentrated (2 to 5%) finely disseminated pyrrhotite and minor chalcopyrite | | | | | | | | |
| | | - core is moderately competent with 5 to 25 cm breakage generally along chloritic slip surfaces | | | | | | | | |
| | | - lower contact is sharp fault contact at 70° CA. | | | | | | | | |
| 343.20 | 343.39 | SHEAR/FAULT ZONE | | | | | | | | |
| | | - small shear foliated fault zone with shearing and contacts @ ± 60-70° CA. Numerous, thin (hairline to 3 mm), anastomosing, shear foliation subparallel, white calcite veinlets<br>- small fault with no gouge, juxtaposing somewhat coarser-grained and intensely chloritized mafics above with somewhat finer-grained, moderately chloritized & silicified mafics below<br>- section is incompetent sheared/schistose zone. | | | | | | | | |
| 343.50 | 353.65 | MODERATELY TO INTENSELY FE-ALTERED (CHLORITIZED AND SILICIFIED?) FELSIC TUFF OR POSSIBLY MAFIC UNIT, WITH NUMEROUS STOCKWORK PY/PO VEINLETS/BANDS | 200212 | 343.20 | 344.80 | 1.60 | 293 | TRACE | 120 | 240 |
| | | | 200213 | 344.80 | 346.10 | 1.30 | 1685 | TRACE | 156 | 100 |
| | | | 200214 | 346.10 | 347.25 | 1.15 | 62 | TRACE | 162 | 30 |
| | | | 200215 | 347.25 | 347.85 | 0.60 | 146 | TRACE | 106 | 60 |
| | | | 200216 | 347.85 | 350.35 | 2.50 | 42 | TRACE | 106 | 70 |
| | | | 200217 | 350.35 | 351.70 | 1.35 | TRACE | TRACE | 94 | 70 |
| | | | 200218 | 351.70 | 353.65 | 1.95 | TRACE | TRACE | 102 | 90 |
| | | - similar to overlying intensely chloritized unit (323.85-343.20 m), except this unit slightly finer grained, somewhat less chloritic and has pervasive silicified/siliceous character including some large irregular silica patches. Locally, minor to 10%, 0.5-1 cm cordierite porphyroblasts (retrograded/altered to chlorite) | | | | | | | | |
| | | - generally dark grey-green, very fine to fine-grained (0.5 mm), moderately magnetic, moderately hard, with fine plagioclase-chlorite-silica± 0.5 to 3% magnetite composition with a slight pervasive silicified appearance | | | | | | | | |
| | | - weakly developed foliation at 35-45° CA | | | | | | | | |
| | | - locally the unit is slightly coarser-grained and more chloritic and appears the same as the overlying unit above the | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | ASSAYS FROM | TO | WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | small fault | | | | | | | | |
| | | - below 348.5 m the unit exhibits minor,to 50%, vague, 0.5-1 cm, darker grey, poikioblastic cordierite porphyroblasts altered to chlorite. Locally these form grey siliceous patches. One of the latter exhibits a felt-like mass of long (0.5 mm), needle-like pyrrhotite crystals | | | | | | | | |
| | | - unit contains numerous thin sulphide fracture veinlets or thin bands, generally in more chloritic sections. Sulphides consist mostly of heavily disseminated, fine (<0.5 mm) pyrite, and lesser fine disseminated pyrrhotite concentrated in stringers and bands | | | | | | | | |
| | | - main sulphide stringer bands occur at: | | | | | | | | |
| | | 343.43 1 mm irregular discontinuous sulphides (po & cpy) on veinlet at ± 45° CA | | | | | | | | |
| | | 345.20 - 345.25 very irregular, wispy laminated to very finely disseminated pyrite in irregular 1-2 cm wide contorted sulphide (30-50%) band | | | | | | | | |
| | | 345.45 - 345.65 thin (1-3 mm), discontinuously sulphide mineralized fracture veinlet at 20° CA, consisting mostly of fine pyrite and lesser pyrrhotite | | | | | | | | |
| | | 347.20 1 cm wide band, with 20% finely disseminated (1-2 mm) pyrite and pyrrhotite, oriented at 40° CA. In very chloritic band and with chlorite slips parallel to sulphide band | | | | | | | | |
| | | 347.45 - 347.60 10% disseminated pyrrhotite & pyrite blebs in 5 cm wide band at 35° CA | | | | | | | | |
| | | 347.70 - 347.80 60% disseminated po & py in thin (5 mm wide) sulphide band at 35-40° CA | | | | | | | | |
| | | 348.70 1 cm wide zone/band with several blebby po/py bands at ± 70° CA, parallel to chloritic slips | | | | | | | | |
| | | 349.55 - 349.70 thin (1-5 mm), irregular, blebby po/py veinlet at 20° CA | | | | | | | | |
| | | 349.95 - 350.05 5 cm patch with 60% disseminated fine to | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | WIDTH | ASSAYS Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | coarse (<1 to 2 mm) pyrrhotite, adjacent to large (5 to 10 cm) silica patch. Coarse buckshot-type pyrrhotite | | | | | | | | |
| | | 350.20 - 350.30 thin (hairline to 2 mm), anastomosing sulphide (py & po) veinlets and disseminated pyrite | | | | | | | | |
| | | 352.45 1 mm stringer at 40° to CA with coarse (1-2 mm) py blebs | | | | | | | | |
| | | - thin (1-5cm) zones adjacent to sulphide bands and veinlets often contain minor finely disseminated sulphides typical of the vein, but rest of unit contains only minor disseminated pyrhotite and pyrite<br>- locally fine needles of pyrite and/or pyrrhotite occur within chloritic cordierite porphyroblasts | | | | | | | | |
| | | - unit has a few percent thin (1-5 mm), planar, silica veins, and larger (0.5-10 cm), irregular silica patches/flood zones. Silica patches are very irregular with swirling outlines and internal configurations, and often occur together or near sulphide bands/ veinlets. Entire unit has a weak silicified appearance particularly adjacent to silica patches | | | | | | | | |
| | | - unit is moderately competent, with 5-20 cm breakage along chloritic slips & fractures, but includes a few, thin (10-20 cm) rubbly zones | | | | | | | | |
| | | - lower contact gradational alteration contact at ± 45° CA | | | | | | | | |
| 353.65 | 426.30 | WEAK TO MODERATELY SILICIFIED, SERICITIZED & CHLORITIZED (locally cordierite) FELSIC METAVOLCANIC CRYSTAL/LAPILLI TUFFS WITH SEVERAL SHEARED FAULT ZONES | 200219 | 353.65 | 355.50 | 1.85 | 17 | TRACE | 24 | 810 |
| | | | 200220 | 355.50 | 356.00 | 0.50 | 24 | TRACE | 36 | 290 |
| | | | 200221 | 356.00 | 357.00 | 1.00 | 9 | TRACE | 22 | 560 |
| | | | 200251 | 371.00 | 373.00 | 2.00 | 1 | TRACE | 20 | 350 |
| | | 353.65 376.20 Section is somewhat variable in appearance but | 200252 | 380.21 | 381.61 | 1.40 | 2 | TRACE | 30 | 580 |
| | | generally has pervasive silicified appearance giving section a | 200253 | 386.15 | 387.50 | 1.35 | TRACE | 72 | 64 | 140 |
| | | subdued or homogenizing effect making it difficult to establish | 200254 | 387.50 | 389.20 | 1.70 | 3 | 4 | 32 | 100 |
| | | the protolith. Most of unit appears to have been a fine | 200255 | 389.20 | 390.25 | 1.05 | 1 | TRACE | 36 | 100 |
| | | quartz/feldspar crystal/lapilli tuff, although locally some | 200256 | 393.50 | 396.85 | 3.35 | 3 | TRACE | 64 | 80 |
| | | larger (2 to 20 mm) rhyolitic lapilli fragments are | 200257 | 396.85 | 398.35 | 1.50 | TRACE | TRACE | 68 | 130 |
| | | identifiable suggesting unit includes some coarser lapilli tuff | 200258 | 398.35 | 399.00 | 0.65 | TRACE | TRACE | 28 | 120 |
| | | sections. Locally, the unit is more massive, without typical | 200259 | 399.00 | 401.00 | 2.00 | 1 | 4 | 22 | 210 |
| | | fine tuffaceous grain size and these could have been rhyolite | 200260 | 401.00 | 403.25 | 2.25 | TRACE | 2 | 18 | 300 |
| | | blocks or flow bands. Typically these sections exhibit minor | 200261 | 403.25 | 405.00 | 1.75 | 1 | 2 | 28 | 450 |
| | | small (1 mm) feldspar crystals | 200262 | 409.00 | 411.00 | 2.00 | 24 | 8 | 68 | 930 |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION |
|---|---|---|
| | | - unit is generally medium, mottled, grey-green to green-grey, fine-grained (0.5-1 mm) with some visible (minor) bluish quartz eyes and plagioclase phenocrysts. Plagioclase-quartz-sericite- and lesser chlorite composition |
| | | - between 353.65-360 m section contains 10-40%, large (3-10 mm), ovoid, vague to well developed (variably poikioblastic), darker greenish cordierite porphyroblasts |
| | | - weak to moderately foliated at 20-50° CA with average at 40° CA. Foliation somewhat wavy, locally with small (1-3 cm wavelength and amplitude) scale folding |
| | | - section has a light sheared to brecciated appearance |
| | | - section contains 5-10%, irregular to subplanar, often discontinuous quartz veins & patches generally with somewhat diffuse vein edges. Locally these are slightly contorted by folding and often offset by a mm to a cm or two along brittle fracturing. Locally some veins have wormy to almost ptygmatic character. 1 cm quartz vein @ 10° CA within intense zone of epidote alteration (375.40-375.90 m) |
| | | - minor (1-3%), hairline, very light green, irregular to ladder-type tension fractures coated by sericite |
| | | - section generally contains minor finely disseminated pyrite, except near top in more cordierite spotted zone which locally has 1% disseminated pyrite and minor cpy; 3 cm coarsely crystalline semi-massive pyrite band oriented at 20° CA between 355.80 - 356.05 m, and a few other small (= sized) patches of coarse (1-3mm) disseminate pyrite blebs |
| | | - core is moderately broken with 5-20 cm breakage, generally along fractures at 45-90° CA |
| | | - lower contact transitional into more chloritic band |
| | | 376.20 380.76 Mottled light to medium grey, massive to moderately wavy foliated, non-magnetic, siliceous/silicified felsic tuff (locally blue quartz eyes visible); quartz-sericitic composition with minor to a few % reddish biotite and chlorite; locally contains 5-20% cordierite porphyroblasts; section has |

| ASSAYS | | | | | | | |
|---|---|---|---|---|---|---|---|
| SAMPLE No. | FROM | TO | WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
| 200263 | 411.00 | 413.00 | 2.00 | 29 | 8 | 124 | 910 |
| 200264 | 413.00 | 415.00 | 2.00 | 21 | 8 | 112 | 740 |
| 200265 | 423.99 | 424.80 | 1.00 | 11 | 8 | 78 | 788 |
| 200266 | 424.80 | 424.55 | 0.55 | 36 | TRACE | 80 | 530 |
| 200267 | 424.55 | 426.30 | 1.75 | 7 | 4 | 54 | 790 |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | ASSAYS FROM | TO | WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | pervasive silicified appearance | | | | | | | | |
| | | - foliation @ 30-40° CA | | | | | | | | |
| | | - weakly Fe-altered (chlorite, cordierite) felsic metavolcanic crystal tuff | | | | | | | | |
| | | - abundant chlorite parting surfaces subparallel to foliation | | | | | | | | |
| | | - 5%, thin, irregular to subplanar, quartz veins/patches with diffuse contact edges | | | | | | | | |
| | | - minor, but locally a few % disseminated pyrite concentrated near small fractures/shear bands | | | | | | | | |
| | | - competent core, but 10-20 cm breakage generally along fractures at 50-70° CA | | | | | | | | |
| | | - lower contact is gradational across sulphide band into more recognizable felsic crystal tuff | | | | | | | | |
| 380.76 | 386.15 | Moderately chloritic felsic crystal tuff<br>- variably medium grey to green-grey, fine (0.5-1 mm) grain size; quartz-sericitic-chlorite (locally biotite) composition<br>- *protolith was definitely a quartz-feldspar crystal* tuff with numerous, 1-2 mm, rounded blue quartz eyes still evident | | | | | | | | |
| | | - weak to moderately foliated at 35-50° CA, and moderately sheared/broken on sericitic and chloritic slips and fractures | | | | | | | | |
| | | - non-magnetic | | | | | | | | |
| | | - moderate to locally strong chlorite and/or sericite alteration (locally section is also weakly biotitic), alteration differences locally change abruptly across hairline fractures | | | | | | | | |
| | | - 5%, irregular to subplanar (1-5 mm wide), quartz veining, often broken and offset on shear/fracture zones, locally forming large lapilli-like quartz fragments | | | | | | | | |
| | | - numerous (5%), thin (hairline to 2 mm), irregular, anastomosing chlorite fracture surfaces locally producing rubbly broken core | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | ASSAYS FROM | TO | WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | - generally minor finely disseminated pyrite, but locally up to a few % | | | | | | | | |
| | | - moderately competent core, but several rubbly broken zones due to irregular breakage along chlorite slips/fractures | | | | | | | | |
| | | - sharp contact along shear foliated zone @ 38° CA, with thin (1 cm) fault gouge zone | | | | | | | | |
| 336.15 | 390.25 | Moderate to intensely Fe-altered (chlorite-pyrite-pyrrhotite) felsic metavolcanic (possibly silicified mafic metavolcanic) | | | | | | | | |
| | | - medium to dark, mottled, greenish to bluish grey, with fine grain size, but coarse (0.5-1 cm) metamorphic porphyroblastic appearance locally caused by blue siliceous ovoid (0.5 cm) patches (remnant felsic tuff sections), and by small (0.5 cm), chloritic cordierite porphyroblasts. | | | | | | | | |
| | | - locally has a more massive, cherty, rhyolitic appearance with only minor chlorite | | | | | | | | |
| | | - quartz-chlorite-lesser sericite composition | | | | | | | | |
| | | - unit is moderately magnetic due to pyrrhotite, weak to moderate & locally well-developed shear foliation & sulphide banding at 25-30° CA | | | | | | | | |
| | | - 5-6%, fine to coarsely disseminated pyrite & pyrrhotite, often concentrated in foliation parallel bands 1-10 mm thick. Some thicker bands (5-15 cm) consist of heavily disseminated (buck-shot) to semi-massive sulphides composed mostly of pyrite and minor pyrrhotite | | | | | | | | |
| | | - 5% quartz veining similar to overlying unit, mostly offset and broken into discontinuous parts of veins, or small fragments by chloritic slips and fractures | | | | | | | | |
| | | - section includes 5%, massive chlorite along irregular hairline width fractures with chlorite concentrating at fracture intersections | | | | | | | | |
| | | - moderately broken core including some thin (1-10 cm), rubbly broken zones, with breakage on chlorite fractures | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITEOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|

- lower contact gradational along quartz-veined brittle fault/shear at 40° CA

390.25 393.50 Moderate to intensely silicified & chloritized mafic dyke or possibly chloritized felsic tuff

- medium green-grey, fine grained (0.5 mm), relatively homogenous section with upper zone (<392 m) having a coarsely (0.5 to 3 cm) mottled to patchy silicified appearance (35-40%, 0.5-3 cm, ovoid, greyish siliceous patches/ovoids) in fine grained chloritic rock, and lower zone (>392 m) having homogeneous chlorite-plagioclase composition with minor fine grained magnetite

- unit is weakly to moderately foliated at 45-55° CA, with foliation defined by chlorite, and moderatley-strongly magnetic

- possibly silicified & chloritized early dyke; no chilled margins evident

- 1-2%, thin (1-3 mm), subplanar quartz veinlets with slightly diffuse contact margins

- minor to 0.5% pyrite & pyrrhotite as fine wispy disseminations and locally concentrations on thin (hairline) fractures

- contact not well recovered but probably gradational over a few cm

393.50 398.35 Intensely chloritized felsic metavolcanic tuffs; unit has silicified mafic appearance but is chloritized (Fe-altered) felsic tuffs

- medium to dark greyish-green, fine grained, very strongly magnetic, very chloritized, felsic metavolcanic with siliceous groundmass (no visible blue quartz eyes); locally minor biotite

- locally, 5-10%, 1 cm, cordierite porphyroblasts now altered to chlorite

- weak chloritic foliation at 45° CA

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



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

- minor, thin (1-2 mm), wavy, subplanar quartz veins, with somewhat diffuse contact edges

- minor calcite on fractures

- 5-6%, finely crystalline (randomly oriented needles) to finely disseminated pyrite & pyrrhotite, as well as numerous thin (hairline to 0.5 cm) pyrrhotite & pyrite bands. Pyrrhotite is a very bronzy horseflesh brown colour

398.35 426.30 Moderately chloritized, moderate-strongly sericitic, locally cordierite spotted, altered felsic ash to crystal tuffs; below 414 m blue quartz eyes are locally evident

- light to medium grey to green-grey with darker green spotted (1 cm), chloritized cordierite porphyroblasts

- generally moderate wavy foliation at 35-50° CA, and averaging ±45° to CA

- non- to weakly magnetic

- quartz-sericite-chlorite composition, locally with minor to a few % reddish biotite

- section from 398.35-403 m contains about 30-35%, coarse (0.5-1 cm), ovoid, poikioblastic cordierite porphyroblasts with ragged edges, locally folded by foliation (porphyroblasts predate main deformation)

- section below 403 m contains local concentrations of cordierite locally retrograded to chlorite

- minor to 5%, thin (1-5 mm), silica flooding adjacent to fractures, and diffusely bounded, irregular to subplanar quartz veining, and minor, irregular epidote-garnet patches (1-5cm) and thin epidote veinlets

- minor to several percent, fine to coarsely disseminated (buck-shot) pyrite and lesser pyrrhotite, locally concentrating to 5-20% in heavily disseminated bands about 1-20 cm wide

- lower contact is sharp intrusive contact @ 40° to CA

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | WIDTH | ASSAYS Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | - a thermal (coapositional) aureal adjacent to dyke consists of a 1.5 m "cooked" cordierite spotted iron deficient zone, and then 1 metre darker chloritic zone containing 20-25% heavily disseminated pyrite. | | | | | | | | |
| 426.30 | 445.25 | MAFIC (DIABASE) DYKE | | | | | | | | |
| | | - dark green-grey, non-foliated, generally fine grained with coarser interior and glassy aphanitic chilled margins | | | | | | | | |
| | | - magnetic, very homogeneous, plagioclase-chloritized amphibole, minor magnetite composition, with some calcite in rock adjacent to veining, and minor, zoned, 1-2 mm feldspar phenocrysts | | | | | | | | |
| | | - minor hairline calcite fracture veinlets and a few thicker 1-10 cm calcite with chlorite vein breccias (late brittle fracturing) | | | | | | | | |
| | | - no visible sulphides | | | | | | | | |
| | | - lower contact is sharp, (knife-edge), planar intrusive chill edge at 25° CA. | | | | | | | | |
| 445.25 | 458.10 | WEAK TO MODERATE TO LOCALLY INTENSELY CHLORITIZED & SILICIFIED FELSIC METAVOLCANIC FINE LAPILLI & CRYSTAL TUFFS | 280268 | 445.31 | 446.69 | 1.29 | 64 | 4 | 90 | 270 |
| | | - mottled medium green-grey to grey, fine-grained, non-magnetic, locally with good crystal tuff texture preserved; unit similar to 398.35 to 426.30 | | | | | | | | |
| | | - quartz-sericite-chlorite composition, minor to a few % poorly formed (deformed) darker green, small (0.5 cm), irregular cordierite porphyroblasts | | | | | | | | |
| | | - weak to locally moderately developed foliation at 40-45° CA, with chlorite parting surfaces/slips locally well developed in chloritized zones | | | | | | | | |
| | | - 5-10%, thin veins to thicker irregular patches of white cloudy quartz with somewhat diffuse vein edges | | | | | | | | |
| | | - 0.5-1% pyrite locally concentrated as disseminations along | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | fractures in chlorite zones | | | | | | | | |
| | | - relatively hard, competent core, but 30-50 cm breakage parallel to foliation & chloritic slips | | | | | | | | |
| | | - lower contact is relatively sharp & sheared at 15° CA. | | | | | | | | |
| 458.10 | 520.75 | MAFIC METAVOLCANIC | | | | | | | | |
| | | - medium to dark grey to greenish grey, fine to locally medium-grained near the centre of unit | | | | | | | | |
| | | - above 468 m unit locally appears to be an Fe-altered felsic, metavolcanic, but more probably is a silicified mafic; this section contains 2-4% magnetite grains, is very magnetic; weakly foliated @ 30-40° CA, locally defined by chloritic slips and thin wispy stringers of pyrite | | | | | | | | |
| | | - below 468 m unit is massive mafic dyke? or flow, is coarser-grained, non-magnetic (no magnetite) and has predominantly a silicified plagioclase-amphibole pyroxene-quartz composition containing 5-6% epidote-quartz±garnet patches; also includes some felsic blocks/xenoliths? | | | | | | | | |
| | | - unit has silicified, hornfelsed appearance | | | | | | | | |
| | | - weak to moderate pervasive silica alteration and a weak to moderate pervasive chlorite alteration; 5-6% epidote-quartz± garnet-calcite patches, some containing trace pyrite | | | | | | | | |
| | | - 2-3% calcite ± epidote veining, with largest veins up to 1.5-2 cm wide but generally less than 1 cm | | | | | | | | |
| | | - overall pyrite 0.5-1%, but locally concentrated to 3-5% over 10-20 cm intervals as bands parallel to the foliation or concentrations of disseminated cubes | | | | | | | | |
| | | - very competent core with a few more broken zones due to fracturing parallel to chloritic partings | | | | | | | | |
| | | - felsic sections:<br>486-489.15 - strongly sheared, thin, felsic and chlorite bands at 0-15° CA (sheared fault or sheared xenolith) | | | | | | | | |

SCANNED IMAGE



| FROM | TO | LITHOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | - 2% disseminated pyrite<br>- well broken rubbly core with 1-2 cm irregular pieces<br><br>497-498 - thin, 3-10 cm wide felsic band at 0-10° CA<br>- 3-5% disseminated pyrite<br><br>500.90-503.10 - felsic tuff (silica) band with contacts at 10° CA (upper) & 25° CA (lower)<br>- 2-3% pyrite<br><br>509.24-509.45 - felsic crystal tuff band<br>- 2-4% py<br><br>- these felsics are subparallel to CA and could be xenoliths sheared out in dyke, or possibly thin irregular, interflow felsic horizons in mafic flow unit<br><br>· competent core with 25-100 cm breakage<br><br>· lower contact sharp at 70° CA. | | | | | | | | |
| 520.75 | 522.20 | FELSIC METAVOLCANIC CRYSTAL TUFF<br><br>· medium grey, weakly magnetic, fine-grained with 5% blue quartz eyes and feldspar crystals in fine siliceous matrix; very weak to weakly foliated at 45-60° CA<br><br>· 5%, thin (1-5 mm), irregular, crosscutting quartz veining and minor, hairline calcite fractures<br><br>· 3-5% finely disseminated pyrite<br><br>· lower contact sharp but undulating at 80° CA. | 200269 | 520.75 | 522.20 | 1.45 | 196 | 28 | 3190 | 80 |
| 522.20 | 572.41 | MAFIC METAVOLCANIC FLOW (Pillowed?)<br><br>· medium-dark green, very fine grained, weak-moderately magnetic, massive to weakly foliated with silicified or horn-felsed appearance (core breakage across structure & veining)<br><br>· unit is mostly relatively homogeneous but includes several thin (2-50 cm), brecciated pillow or flowtop breccia sections | | | | | | | | |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gulibridge
HOLE No.: GB-135



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

- several thin (1-10 cm), chloritic/siliceous sheared/foliated bands could be pillow rims ;

- unit contains 5-10%, irregular to crosscutting, thin (1-5 mm), patchy veined epidote-garnet alteration bands

- a few thin to thicker (1-10 mm), subplanar, calcite veins oriented at various angles to the CA

- unit also includes a few, thin (1-10 cm), laminated interflow sediment horizons, as well as a few thicker felsic crystal tuff horizons similar to 520.75-522.20

- felsic crystal tuffs horizons occur at:
  532.00-534.85 - only minor to 0.5% py, but with minor vague chloritic cordierite porphyroblasts; contacts at 30 and 45° CA

  536.15-537.25 - rhyolite or chert lower section; no pyrite; contacts at 45° CA

  542.50-545.40 - same as 520.75-522.20 m with 3-5% pyrite and blue qtz eyes; contacts @ 45° CA

- core competent with 50-150 cm breakage across foliation and veining (hornfelsed core).

- lower contact not encountered

572.41 END OF HOLE

CASING LEFT IN HOLE

DOWN-HOLE SURVEY DATA

| DEPTH | INCLINATION | BEARING |
|---|---|---|
| 92.05 | -61.00 | 137.00 |
| 183.49 | -59.00 | 134.00 |

SCANNED IMAGE

# RIO ALGOM EXPLORATION INC.

## DIAMOND DRILL LOG

PROPERTY: Gullbridge
HOLE No.: GB-135



| FROM | TO | LITEOLOGICAL DESCRIPTION | SAMPLE No. | FROM | TO | ASSAYS WIDTH Cu (ppm) Pb (ppm) Zn (ppm) Ba (ppm) |
|---|---|---|---|---|---|---|

| DEPTH | INCLINATION | BEARING |
|---|---|---|
| 274.93 | -60.00 | 141.00 |
| 366.37 | -59.00 | 151.50 |
| 454.76 | -60.00 | 135.00 |
| 526.91 | -62.00 | 142.00 |
| 578.59 | -61.00 | 150.00 |
| 572.41 | -61.00 | 150.00 |

SCANNED IMAGE

PROJECT: ROBERTS ARM - GULLBRIDGE

# RAE



HOLE NO. GB-135

| SAMPLE NUMBER | SAMPLE INTERVAL (M) | | | ASSAYS | | | | Sulphides | SAMPLE DESCRIPTION Sampled by M. Lenters |
|---|---|---|---|---|---|---|---|---|---|
| | FROM | TO | LENGTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) | (%) | |
| 200,160 | 110.70 | 112.20 | 1.50 | 5 | 96 | 18 | 530 | 0.5-1% Py | - quartz veined/fluoted section in well brecciated rhyolite |
| 200,161 | 117.00 | 118.08 | 1.08 | 14 | 16 | 30 | 860 | Minor Py Trace Cpy | - shear foliated felsic metavolcanic |
| 200,162 | 189.60 | 191.00 | 1.40 | 42 | 20 | 84 | 540 | 0.5% Py | - moderately chloritic and moderately siliceous mafic?/felsic? metavolcanic |
| 200,163 | 191.00 | 193.00 | 2.00 | 41 | 8 | 82 | 350 | 0.5% Py | - moderately chloritic and moderately siliceous mafic?/felsic? metavolcanic |
| 200,164 | 193.00 | 194.50 | 1.50 | 42 | 4 | 76 | 370 | 0.5% Py | - moderately chloritic and moderately siliceous mafic?/felsic? metavolcanic |
| 200,165 | 194.50 | 195.50 | 1.00 | 58 | 4 | 72 | 470 | 1% Py | - silicified and chloritic, sheared mafic metavolcanic |
| 200,166 | 195.50 | 196.50 | 1.00 | 73 | 2 | 54 | 350 | 1% Py | - silicified and chloritic, sheared mafic metavolcanic |
| 200,167 | 196.50 | 198.00 | 1.50 | 192 | 44 | 44 | 240 | 1-2% Py | - sheared/faulted, chloritized felsic metavolcanic |
| 200,168 | 198.00 | 199.20 | 1.20 | 119 | 70 | 50 | 170 | 1-2% Py | - sheared/faulted, chloritized felsic metavolcanic |
| 200,169 | 199.20 | 201.00 | 1.80 | 59 | <2 | 48 | 400 | 1% Py | - massive, chloritic and silicified, mafic metavolcanic flow?/dyke? |
| 200,170 | 222.00 | 224.05 | 2.05 | 77 | 2 | 60 | 230 | Trace Py | - massive, medium grained, mafic metavolcanic flow? with minor magnetite bands |
| 200,171 | 239.00 | 240.50 | 1.50 | 53 | 2 | 264 | 190 | 2-3% Py | - interbedded chert, cherty argillite and felsic metavolcanic tuffs/volcaniclastics; weak to moderately chloritic |
| 200,172 | 240.50 | 242.50 | 2.00 | 190 | 4 | 1830 | 70 | 5-6% Py | - interbedded chert, cherty argillite and weak to mod. chloritic felsic metavolcanic tuffs/volcaniclastics, heavily dis. py patches |
| 200,173 | 242.50 | 244.00 | 1.50 | <1 | 20 | 180 | 1820 | 2-3% Py | - cordierite spotted, chloritic-sericitic felsic metavolcanic schist with dis pyrite |
| 200,174 | 244.00 | 245.00 | 1.00 | 45 | 24 | 230 | 300 | 10-15% Py | - cordierite spotted, chloritic-sericitic felsic metavolcanic schist with coarsely disseminated pyrite bands |
| 200,175 | 245.00 | 246.00 | 1.00 | 34 | 4 | 154 | 1550 | 3% Py | - cordierite spotted, chloritic-sericitic felsic metavolcanic schist with coarsely disseminated pyrite |
| 200,176 | 246.00 | 248.00 | 2.00 | 14 | <2 | 142 | 1520 | 3% Py | - cordierite spotted, chloritic-sericitic felsic metavolcanic schist with coarsely disseminated pyrite |
| 200,177 | 248.00 | 250.00 | 2.00 | 15 | 2 | 152 | 1100 | 2-3% Py | - cordierite spotted, chloritic-sericitic felsic metavolcanic |

SCANNED IMAGE

PROJECT: ROBERTS ARM - GULLBRIDGE

# RAE



HOLE NO. GB - 135

| SAMPLE NUMBER | SAMPLE INTERVAL (M) | | | ASSAYS | | | | Sulphides | SAMPLE DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| | FROM | TO | LENGTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) | (%) | |
| 200,178 | 250.00 | 251.50 | 1.50 | 1 | <2 | 94 | 1060 | 1% Py | -cordierite spotted, chloritic - sericitic felsic metavolcanic schist with finely disseminated pyrite |
| 200,179 | 251.50 | 252.00 | 0.50 | 1530 | <2 | 632 | 540 | 1-2% Py 1%Po, 2%Cpy | -cordierite spotted, chloritic - sericitic felsic metavolcanic schist with iron sulphides and cpy in stringers and blebs |
| 200,180 | 252.00 | 254.00 | 2.00 | 127 | <2 | 156 | 1080 | 1-2% Py | -cordierite spotted, chloritic - sericitic felsic metavolcanic schist with coarsely disseminated pyrite |
| 200,181 | 254.00 | 256.20 | 2.20 | 22 | <2 | 56 | 1140 | Minor Py | -cordierite spotted, chloritic - sericitic felsic metavolcanic schist with coarsely disseminated pyrite |
| 200,182 | 256.20 | 258.45 | 2.25 | 4 | <2 | 68 | 1160 | 2-3% Py | -cordierite spotted, chloritic - sericitic felsic metavolcanic schist with coarsely disseminated pyrite |
| 200,183 | 258.45 | 260.00 | 1.55 | 2 | <2 | 46 | 140 | 3-5% Py | -sericitic - chloritic schist (felsic metavolcanic crystal tuff) with dis. py. conc. in foliation subparallel bands |
| 200,184 | 260.00 | 261.50 | 1.50 | 14 | <2 | 64 | 250 | 3-5% Py | -sericitic - chloritic schist (felsic metavolcanic crystal tuff) with dis. py. conc. in foliation subparallel bands |
| 200,185 | 267.30 | 268.80 | 1.50 | 77 | 8 | 34 | 340 | 3-5% Py | -felsic metavolcanic quartz - feldspar crystal and fine lapilli tuff with finely dis py, and a 5cm py patch (50% py) |
| 200,186 | 270.30 | 271.80 | 1.50 | <1 | 2 | 20 | 240 | 5% Py | -felsic metavolcanic quartz - feldspar crystal and fine lapilli tuff with finely disseminated pyrite |
| 200,187 | 271.80 | 273.30 | 1.50 | <1 | 4 | 20 | 250 | 5% Py | -felsic metavolcanic quartz - feldspar crystal and fine lapilli tuff with finely disseminated pyrite |
| 200,188 | 277.70 | 279.10 | 1.40 | <1 | <2 | 28 | 310 | 3-5% Py | -felsic metavolcanic quartz - feldspar crystal and fine lapilli tuff with finely disseminated pyrite |
| 200,189 | 279.10 | 280.60 | 1.50 | <1 | <2 | 18 | 320 | 5% Py | -felsic metavolcanic quartz - feldspar crystal and fine lapilli tuff with finely disseminated pyrite |
| 200,190 | 283.50 | 284.90 | 1.40 | <1 | <2 | 14 | 170 | 5-10% Py | -patchy silicified felsic metavolcanic crystal tuff with finely disseminated pyrite |
| 200,191 | 289.00 | 290.30 | 1.30 | <1 | <2 | 14 | 110 | 5-6% Py | -felsic quartz - feldspar crystal / fine lapilli metavolcanic tuff |
| 200,192 | 294.55 | 295.90 | 1.35 | <1 | <2 | 14 | 190 | 5% Py | -felsic metavolcanic quartz - feldspar crystal / fine lapilli tuff |
| 200,193 | 295.90 | 296.35 | 0.45 | <1 | 2 | 14 | 200 | 3-5% Py | -felsic metavolcanic quartz - feldspar crystal / fine lapilli tuff |
| 200,194 | 301.90 | 303.75 | 1.85 | <1 | <2 | 18 | 300 | 5-7% Py | -felsic metavolcanic quartz - feldspar crystal / fine lapilli tuff with disseminated pyrite locally concentrated in bands |
| 200,195 | 304.80 | 306.10 | 1.30 | <1 | <2 | 28 | 260 | 5% Py | -felsic metavolcanic quartz - feldspar crystal / fine lapilli, |

SCANNED IMAGE

PROJECT: ROBERTS ARM - GULLBRIDGE

# RAE



HOLE NO. GB-135

| SAMPLE NUMBER | SAMPLE INTERVAL (M) | | | ASSAYS | | | | Sulphides | SAMPLE DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| | FROM | TO | LENGTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) | (%) | |
| 200,196 | 306.10 | 307.25 | 1.15 | <1 | <2 | 20 | 610 | 2-3% Py | -felsic metavolcanic ash tuff (weak to moderately sericitic) with coarsely disseminated pyrite |
| 200,197 | 307.25 | 309.10 | 1.85 | <1 | <2 | 12 | 520 | 1-2% Py | -quartz flooded/(veined) (30 to 50%) felsic metavolcanic ash tuff with coarsely disseminated pyrite |
| 200,198 | 309.10 | 310.40 | 1.30 | <1 | <2 | 26 | 300 | 5-7% Py | -felsic metavolcanic / quartz-feldspar crystal / fine lap.ll. tuff with disseminated pyrite |
| 200,199 | 310.40 | 311.75 | 1.35 | <1 | <2 | 14 | 480 | 2-3% Py | -weakly sheared felsic metavolcanic tuff and massive rhyolite? with disseminated pyrite |
| 200.200 | 311.75 | 313.05 | 1.30 | <1 | <2 | 30 | 730 | 3-6% Py | -cordierite porphyroblastic felsic metavolcanic with finely disseminated pyrite |
| 200,201 | 313.05 | 313.35 | 0.30 | 1 | 20 | 72 | 120 | 20% Py | -cherty felsic metavolcanic with finely disseminated pyrite |
| 200,202 | 313.35 | 314.40 | 1.05 | <1 | <2 | 44 | 480 | 3-6% Py | -cordierite porphyroblastic felsic metavolcanic with finely disseminated pyrite |
| 200,203 | 314.40 | 315.70 | 1.30 | 1 | 20 | 40 | 170 | 5-10% Py | -massive cherty rhyolite and cordierite porphyroblastic felsic metavolcanic with coarsely disseminated pyrite |
| 200,204 | 320.90 | 323.15 | 2.25 | 10 | 36 | 62 | 400 | 1-2% Py | -shear foliated (mylonitic) felsic metavolcanic with finely disseminated pyrite |
| 200,205 | 328.00 | 329.40 | 1.40 | 31 | <2 | 60 | <10 | Minor Po | -intensely chloritic rock |
| 200,206 | 333.10 | 334.60 | 1.50 | 34 | 40 | 192 | <10 | Minor Po | -intensely chloritic rock |
| 200,207 | 334.60 | 336.20 | 1.60 | 29 | <2 | 86 | <10 | Minor Po | -intensely chloritic rock |
| 200,208 | 339.00 | 340.00 | 1.00 | 112 | <2 | 112 | <10 | Minor Po | -intensely chloritic rock |
| 200,209 | 340.00 | 341.50 | 1.50 | 231 | <2 | 138 | 10 | Minor Po Trace Cpy | -intensely chloritic rock, locally with minor pyrrhotite and chalcopyrite on small fractures/slips |
| 200,210 | 341.50 | 342.10 | 0.60 | 3250 | <2 | 192 | 10 | 3-5% Po 0.5% Cpy | -intensely chloritic rock with 3cm wide heavily disseminated pyrrhotite with chalcopyrite, band. |
| 200,211 | 342.10 | 343.20 | 1.10 | 192 | <2 | 128 | <10 | Minor Po Trace Cpy | -intensely chloritic rock with a few fractures containing minor pyrrhotite and trace chalcopyrite |
| 200,212 | 343.20 | 344.80 | 1.60 | 293 | <2 | 120 | 240 | Minor Po Py Minor Cpy | -moderately siliceous and chloritic mafic rock with thin fe-sulphide fractures |
| 200,213 | 344.80 | 346.10 | 1.30 | 1085 | <2 | 156 | 100 | 0.5% Py Minor Po | -moderately siliceous and chloritic mafic rock containing |

SCANNED IMAGE

PROJECT: ROBERTS ARM - GULLBRIDGE

# RAE



HOLE NO. GB-135

| SAMPLE NUMBER | SAMPLE INTERVAL (M) | | | ASSAYS | | | | Sulphides | SAMPLE DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| | FROM | TO | LENGTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) | (%) | |
| 200,214 | 346.10 | 347.25 | 1.15 | 62 | <2 | 162 | 30 | Minor Py Minor Po | -moderately siliceous and chloritic mafic rock |
| 200,215 | 347.25 | 347.85 | 0.60 | 140 | <2 | 106 | 60 | 3-5% Py 1-2% Po Tr Cpy | -moderately siliceous and chloritic mafic rock with several heavily disseminated pyrrhotite/pyrite bands |
| 200,216 | 347.85 | 350.35 | 2.50 | 42 | <2 | 106 | 70 | 1-2% Py 1-2% Po Tr Cpy | -moderately siliceous and chloritic mafic rock with several thin heavily disseminated pyrrhotite/pyrite bands |
| 200,217 | 350.35 | 351.70 | 1.35 | <1 | <2 | 94 | 70 | Trace Py Trace Po | -moderately siliceous and chloritic mafic rock |
| 200,218 | 351.70 | 353.65 | 1.95 | <1 | <2 | 102 | 90 | 0.5% Po Minor Py | -moderately siliceous and chloritic mafic rock with one thin pyrrhotite/pyrite band |
| 200,219 | 353.65 | 355.50 | 1.85 | 17 | <2 | 24 | 810 | Minor Py Minor Cpy | -cordierite spotted, moderately siliceous & chloritic and sericitic felsic metavolcanic tuff |
| 200,220 | 355.50 | 356.00 | 0.50 | 24 | <2 | 36 | 290 | 6-7% Py | -cordierite spotted, moderately siliceous & sericitic, and weakly chloritic felsic metavolcanic tuff with 3cm pyrite band |
| 200,221 | 356.00 | 357.00 | 1.00 | 9 | <2 | 22 | 560 | Minor Py | -cordierite spotted, moderately siliceous & sericitic, and weakly chloritic felsic metavolcanic tuff |
| 200,251 | 371.00 | 373.00 | 2.00 | 3 | <2 | 20 | 350 | Minor Py | -weak to moderately altered felsic metavolcanic tuff |
| 200,252 | 380.21 | 381.61 | 1.40 | 2 | <2 | 30 | 580 | Minor Py | -intensely chloritized felsic metavolcanic crystal tuff |
| 200,253 | 386.15 | 387.50 | 1.35 | <1 | 72 | 64 | 140 | 3-5% Py+ Po | -intensely chloritized felsic metavolcanic crystal tuff |
| 200,254 | 387.50 | 389.20 | 1.70 | 3 | 4 | 32 | 100 | 3-5% Py+ Po | -intensely chloritized felsic metavolcanic crystal tuff |
| 200,255 | 389.20 | 390.25 | 1.05 | 1 | <2 | 36 | 100 | 5-7% Py+ Po | -intensely chloritized felsic metavolcanic crystal tuff |
| 200,256 | 393.50 | 396.85 | 3.35 | 3 | <2 | 64 | 80 | 5-6% Py+ Po | -intensely chloritized felsic metavolcanic with disseminated and fracture controlled iron sulphides |
| 200,257 | 396.85 | 398.35 | 1.50 | <1 | <2 | 68 | 130 | 5-6% Py+ Po | -intensely chloritized felsic metavolcanic with disseminated and fracture controlled iron sulphides |
| 200,258 | 398.35 | 399.00 | 0.65 | <1 | <2 | 28 | 120 | 10-15% Py 3% Po | -moderately chloritized felsic metavolcanic |
| 200,259 | 399.00 | 401.00 | 2.00 | 1 | 4 | 22 | 230 | 2-3% Py 1% Po | -moderately chloritized felsic metavolcanic |
| 200,260 | 401.00 | 403.25 | 2.25 | <1 | 2 | 18 | 300 | 2-3% Py 1% Po | -moderately chloritized felsic metavolcanic |

SCANNED IMAGE

PROJECT: ROBERTS ARM - GULLBRIDGE

# RAE



HOLE NO. GB-135

| SAMPLE NUMBER | SAMPLE INTERVAL (M) | | | ASSAYS | | | | Sulphides | SAMPLE DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|
| | FROM | TO | LENGTH | Cu (ppm) | Pb (ppm) | Zn (ppm) | Ba (ppm) | (%) | |
| 200,261 | 403.25 | 405.00 | 1.75 | 3 | 2 | 28 | 450 | Minor Py Minor Po | - moderately chloritized felsic metavolcanic |
| 200,262 | 409.00 | 411.00 | 2.00 | 24 | 8 | 68 | 930 | Minor Py | - moderately chloritized felsic metavolcanic |
| 200,263 | 411.00 | 413.00 | 2.00 | 29 | 8 | 124 | 910 | 0.5-1% Py | - moderately chloritized felsic metavolcanic |
| 200,264 | 413.00 | 415.00 | 2.00 | 21 | 8 | 112 | 740 | Minor Py | - moderately chloritized felsic metavolcanic |
| 200,265 | 423.00 | 424.00 | 1.00 | 11 | 8 | 70 | 780 | 0.5-1% Py | - moderately chloritic / biotitic altered felsic crystal tuff |
| 200,266 | 424.00 | 424.55 | 0.55 | 36 | <2 | 80 | 530 | 10-15% Py | - moderately chloritic / biotitic altered felsic crystal tuff with heavily disseminated coarse pyrite |
| 200,267 | 424.55 | 426.30 | 1.75 | 7 | 4 | 54 | 790 | Minor Py | - thermal iron-leached zone (aureole) adjacent to intrusive dyke |
| 200,268 | 445.31 | 446.60 | 1.29 | 64 | 4 | 90 | 270 | 2-4% Py | - moderately chloritized and silicified felsic metavolcanic tuff |
| 200,269 | 520.75 | 522.20 | 1.45 | 196 | 20 | 3190 | 80 | 3-5% Py | - weakly chloritized felsic metavolcanic crystal tuff |