

DRILL HOLE SUMMARY

IR-85-01

<u>Metres</u>	<u>Comments</u>
0 - 200.10m	Roy Dacite Package, Na ₂ O depleted from 78-200.10 metres with weak to strong Ba enrichment at 125 (2300 ppm), 137 (1350 ppm) and 181 (1840 ppm) metres <ul style="list-style-type: none">- 3% pyrite-rich fragments in Dacitic lapilli tuff from 20.7 - 25.20m and from 60.75 - 66.7m- chloritized dacitic lapilli tuffs from 102.0 - 103.6 soaked with 3-5% pyrite and trace bleby chalcopryrite- chalcopryrite associated with minor moly in white vein quartz from 125.8 - 186m
200.10 - 305.11m	Roy Rhyolite - massive, flowbanded and flow brecciated rhyolite, aphyric and aphanitic <ul style="list-style-type: none">- weakly chloritized and Na₂O-depleted from 239 to 265 metres- 2, 3-4mm wide seams of massive chalcopryrite in chloritized rhyolite breccia at 200.15m- fine, crudely layered chalcopryrite in ash laminae from 200.30 - 200.35- 1% fine chalcopryrite over 2cm @ 209.35m
305.11 - 328.27m	Lower Andesite/Dacite Package <ul style="list-style-type: none">- heterolithic breccia - lapilli tuff, tr. pyrite and not altered.

Indian River (IR)
Drill Holes 826102
85-01 → 85-06
926/10

CORPORATION FALCONBRIDGE COPPER

DRILL HOLE RECORD

X METRIC UNITS
IMPERIAL UNITS

HOLE NUMBER IR-85-01	GRID	FIELD COORDS	LAT.	DEP.	ELEV. 606m	COLLAR BRNG. 212°	COLLAR DIP -74°	HOLE SIZE BQ	FINAL DEPTH 328.27m	
PROJECT 313	CLAIM #	SURVEY COORDS.				DATE STARTED: Sept 26/85 DATE COMPLETED: Oct 11/85	CONTRACTOR: M & B Diamond Drilling CORE STORAGE: CASING:			
PURPOSE Located to test Roy Dacite and contact with underlying Roy Rhyolite down dip from an area of anomalous surface mineralization and alteration.								ROD LOG COLLAR SURVEY	PULSE EM SURVEY MULTISHOT SURVEY	
ACID TESTS				TROPARI TESTS			MULTISHOT DATA			
DEPTH ()	CORRECTED ANGLE	DEPTH ()	CORRECTED ANGLE	DEPTH ()	AZIMUTH	DIP	DEPTH ()	AZIMUTH	DIP	
30m	76°			39.6m	210.5°	73°				
61m	76-77°(?)			151m	218°	72°				
91m	74°			288m	219°	66°				
122m	75°									
152m	75°									
183m	73°									
213m	76°									
244m	75°?									
274m										
304.8m										
328m	67-68°									

HOLE NO IR-85-01

LOGGED BY Harold Gibson

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
0 to 12.5	Casing					
12.5 to 15.4m	Feldspar Porphyritic Amygdaloidal dacite dyke	Colour - grey-green Grain Size - f.g. Massive dyke, - contains 3-4% sericite altered, weakly glomeroporphyritic feldspar phenocrysts <0.5cm - 3-5% elongate (upto 1cm) calcite filled amygdules - aphanitic groundmass	(45°) at 15.4	Light bleaching of core - pale green grey from grey - sericite?		
15.4 to 17.3	Sheared argillaceous breccia	Colour - grey Broken, foliated core at 30-20° to C.A. - chl, veined shear, felsic frags locally observed - grey sheen to core, weakly graphitic?	dyke bounded		Fine diss. pyrite, <1%	
17.3 to 20.7	Feldspar porphyritic Dacite Dyke	Colour - grey-buff to light green Grain Size - f.g. 8-12% feldspar phenocrysts from 2mm to 5mm in an aphanitic groundmass.	Contact at 17.3 @ 40° to CA	Light green-buff colour occur as patches - weak bleaching or sericite alteration - dark fractures at 30° to C.A. - chilled margins	Tr. pyrite.	
20.7 to 25.20	Dacitic - Rhyodacitic Lithic-vitric lapilli tuff "sulphide rich frags"	Colour - light grey-green Consists of subangular white to light green-grey dacitic lithic frags <15%, <10% wispy chloritic frags (pumice - vitric) and <3% feldspar crystals - frags from <0.5cm to 2.5cm - <3% sulphide (py) rich + ms pyrite fragments from <0.5cm to 2cm, subangular in form. - groundmass is a fine-grained, aphanitic light green dacite - few calcite veins at 10-15° to CA		- primarily chl alt of vitric frags	- pyrite rich fragments, frags totally composed of fine pyrite or replacing vitric frags - minor py along ft's	Geochem #3676 20.7-24.7 Dacite dyke from 20.4 20.75 at 75° to CA

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25.20 to 35.35	Mass. Dacite /Rhyodacite flow or tuff	Massive dacite, similar to groundmass of above unit but no distinct frags. - possible massive flow or homogeneous massive interior of an ash flow. Dacite is massive from 25.2 to 34.2 - from 34.2-35.35 dacite is a distinct breccia containing frags of massive aphanitic dacite, fb dacite-rhyodacite and bluish quartz fragments.				F e l d s p a r porphyritic dacite dyke from 26.5 to 28.6 at 75° to C.A. - 2cm wide flowhanded dacite dyke at 70° at 27.8m. M a s s i v e flowbanded dacite dyke, faintly feldspar porphyritic from 28.6m to 30.94m at 50° to CA
35.35 to 51.72	Massive Rhyodacite Dyke	Colour - white Grain Size - aphanitic Aphanitic rhyodacite, <1% feldspar phenocrysts (up to 4mm) - faint flowbands locally	35-40° to C A a t 35.35 contact at 51.72m @ 70° to CA	reddish-brown hematitic alteration along fractures locally - fractures at 70° to C.A. & <40° to C.A. - core blocky where fractured & hamatitic (hematite/quartz-filled 1-2mm fractures).		Very Blocky
51.72 to 53.5	Rhyodacite tuff - Lapilli tuff	Colour - light grey Grain Size - aphan. Massive, homogeneous aphyric tuff containing up to 5-6% wispy, irregular chl/ser frags up to 2cm X 4mm - frags oriented and subparallel at 75° to C.A. - fine-grained aphyric matrix, looks spherulitic and devitrified.	qtz vein at 53.5 (45° CA) m a r k s g r a d a - t i o n a l contact		Minor fine disseminated pyrite in chl/ser frags.	

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66.7 to 66.94	Dacitic Rhyodacitic Tuff	Colour - grey-green Grain Size - f.g. Massive bed of dacitic tuff, few felsic frags (<0.5cm) at base of unit.	Contact at 66.94 @ 50° CA			
66.94 to 78.16	Andesitic Tuffs	Colour - Dark green Grain Size - f.g. 66.94-67.50 F.g., aphanitic andesite tuff/ash bed 67.50-67.60 f.g. Andesitic tuff, slightly coarser grained and lighter coloured than above bed 67.60-78.16 Massive, homogeneous andesitic tuff/ash - faint, darker fragment forms observed but not definite - 1% pyrite/nodules or fragments <1cm in size - cut by calcite/quartz veins at 5°, 20° and 75° to C.A. - sericite shear from 76.7 to 76.95 at 40° to C.A. - contact at 78.16 lost to broken core			pyrite forms massive nodules/fragments, occurs in fractures and as disseminated clots to 2cm in size.	Geochem #3678 74.5 to 77.0 m.
78.16 to 83.3	Chloritized Dacitic tuff lapilli tuff	Colour - light green grey to dark green 78.16-83.3 Vitric, lithic lapilli tuff obscured by chlorite alteration Upper part of unit to 82.9 is a light green, fine dacitic lapilli tuff consisting of light to dark green subangular lithic vitric fragments (<1cm) in a fine matrix - after 82.9 unit contains large altered vitric fragments that are irregular to subangular in form in a light grey siliceous almost pinkish aphanitic matrix. - large blocks up to 12cm in size Contact at 83.3 at 40-45° to C.A.		Irregular, stringer like zones of strong chl alteration cut unit with intense, dark green chlorite alteration envelopes up to 1cm wide mantling irregular fractures - alt/fracturing so intense locally resulting in situ bx from 78.4-78.55 79.3-79.85 80.8-81.1 - unit in total is chloritized.	Disseminated pyrite and pyrite cubes in chl dacite	Geochem #3679 78.4-81.1

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83.3 to 89.16	Dacitic lithic, vitric lapilli tuff	Colour - light green 83.3 to 83.55 fine, massive, non bedded dacitic tuff, CA angle at 40° 83.55 to Dacitic lapilli tuff - consists of subangular to angular (up to 3cm) lithic frags of green grey aphyric to mafic porphyritic dacite and irregular light green, wispy "vitric" fragments up to 2.5cm long X 5mm wide - locally amygdaloidal and typically with mafic phenocrysts - dacitic lithic frags wk porphyritic >35-40% fragments - light green aphanitic matrix - frags elongate at 40° to C.A. - light green - darker green mafic porphyritic fragments are irregular in form with distinct tails - somewhat locally molded about lithic frags - incipient welding?		- weak but pervasive chlorite alteration - foliation at 60-50° to CA	diss. pyrite in both fragments and matrix - light pink hematitic color to matrix locally accompanied by up to 1% disseminated and clotty pyrite.	Geochem #3680 84.43-87.47
89.16 to 96.16	Flowbanded Rhyolite Dyke	Colour - light green Grain Size - aphanitic Flowbanded, locally flow- brecciated (in situ) margins to dyke; interior is massive, and blocky with fractures at 30-65° to CA	contact at 96.16 @ 40° to CA			

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96.16 to 103.60	Chloritized Dacite Lapilli tuffs	Colour - green Chloritized dacitic vitric lapilli tuff - fragments are chlorite altered, small (typically <1cm), aphyric and vitric. (Top 10cm of unit may be base of lithic-vitric tuff described above) - fragments are irregular to shard like and sit in a light green dacitic matrix with mafic phenocrysts (<5%)		Unit is pervasiably chloritized and speckled with leucoxene crystals - unit is in situ brecciated from 96.16 - 97.10 97.50 - 97.60 97.78 - 97.97 - here lapilli are broken and separated into frags (>1cm) by fine qtz - hematite veins - "a la Roy". From 102.0 - 103.6 is in situ brecciated by fine grey quartz - chert - veins.	>10% fine disseminated pyrite from 96.16 to From 102.0 to 103.6 in situ brecciated chl lapilli tuff is soaked with fine disseminated pyrite with minor hematite - 3-5%. - pyrite found typically in chl dacite but also in qtz-vein/chert matrix - 1cm bleb of ccp at 102.80	Geochem #3682 96.62 - 99.67 Geochem #3683 102.0 to 103.5
103.60 to 121.10	Rhyolite Dyke	Colour - grey-white Grain Size - aphanitic Massive, fine grained - aphanitic rhyolite dyke <1% (1-2mm) feldspar phenocrysts - contorted flow banding locally	Contact at 121.10 @ 30° to CA	Zip	Zip	Cave in hole between 117.95 and 120m.

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121.0 to 186.44	Dacitic Crystal tuff and lapilli tuff	Colour - green-grey 121.0 - 129.3 massive non bedded crystal lapilli tuff consisting of - <10% subangular - angular dark green vitric fragments (<1cm) - <10% subhedral mafic phenocrysts up to 4mm in an aphanitic light grey siliceous matrix - possible larger fragments from 128.3 - 129.3 that range in size up to 8cm (typically <2cm) 129.3 - 167 - massive and uniform dacitic vitric lapilli tuff and crystal tuff 167 - 171.9 - dacite characterized by larger chloritized fragments up to 3-4cm - subangular in form and have sharp to fuzzy contacts with matrix - fine <1cm fragments are absent - matrix is light grey-green in colour		121 - 129.3 - dacitic tuff is light grey in colour adjacent to dyke (at 121m) and gradually changes to a grey-green color at 123.7m, otherwise unit is fresh looking - unit has a grey (light pink here) color where cut by quartz veins (at 5-45° to CA) 129.3 - 164.3 - weak but pervasive chlorite alteration - incipient. 164.3 - 173 - moderate to strong chlorite alteration - interval from 165.3 - 166 has weak hematitic staining - leucoxene common	- dacite contains fine (<1mm) disseminated and fracture-filling pyrite (tr. ccp) throughout - typically <1-2% - from 128.45 to 128.68 dacite has a pink hue and contains >8% fine pyrite - chalcopyrite is typically associated with white vein quartz at 125.8 and 126.7m (1% ccp over 10cm) - reddish brown hematitic? stain associated with fractures in bleached dacite adjacent to rhyolite dyke. <1% diss pyrite (up to 3% over 10cm locally) after 129.3m to 158.8m <1% ccp in quartz veins from 137.0 - 138 and at 138.5m	Geochem #3685 125.5 - 129.0 Geochem #3686 137.4 - 140.51 F e l d s p a r porphyritic calcite amygdaloidal andesite dyke at 75-80° to CA from 132.45 to 134.16 Cut by magnetic basalt dyke from 133.8 - 134 at 45° to CA Geochem #3687 168 - 171.9 Assay #3801 157.72 - 158.43 Assay #3808 126.2 - 126.95 Assay #3809 128.24 - 128.72

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		171.9 - (186.44) Fine lapilli tuff with <10% aphyric, subangular "vitric" fragments - 8-10% mafic prismatic crystals - thin -2mm wide - chert bed at 20° to CA at 175m, possibly a vein, characterized by a white base and aphanitic grey top		171.9 - (186.44) Mottled sericite alteration to 180.5 with light grey patches in a light green matrix - good sericite selvages mantling quartz - sulphide veins from 180.5 - 181.56 - fine hematitic staining + diss pyrite from 179.4 - 180.4 - strongly sericitized and light grey-pink in colour from 183.6 to 186.44	Quartz veins containing blebs of chalcopyrite, pyrite and locally molybdenite @ 146.28 - ccp/qtz vein at 25° to CA 146.43 - ccp/qtz vein 147.90 - ccp in qtz/vein at 35° to CA 157.77 - 158.70 is a qtz-vein zone (10° to CA) with up to 1% ccp and molybdenite locally (over several m). Host dacite is soaked with 3-5% disseminated fine pyrite and is light grey in colour (sericite?) 171.9 - 186.44 1% fine diss pyrite, trace ccp - ccp in qtz veins at 179.5m 180.2-180.3m 181.12m 181.45m 185.01m 185.25	Magnetic, basalt dykes from 149.56 - 149.74 at 85° to CA and from 152.45 - 153.55 at 60° to CA Geochem #3688 181.9 - 184.5 Assay #3810 145.80 - 147.10

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186.44 to 199.64	Chloritized Dacitic or Andesitic tuff	Colour - green Grain Size - f.g. Fine andesitic or chloritized Dacitic tuff, massive and not bedded contact at 186.44 is sharp at 60° - may be depositional or alteration front - consists of chloritized lapilli sized fragments (<1cm) that are subangular in form and account for <20% of unit - fine fragments aligned at 40° to CA from 194.55 to 196.36 Breccia unit consisting of angular fragments of chloritized dacite tuff, locally hematized (pink) + weakly silicified in a fine-grained grey to pink (hematitic) quartz rich matrix; fragments range from >2mm to < 5cm. Bx unit contains chlorite shears/seams at 65-80° to CA <u>FAULT?</u> - few quartz veins at 90-70° to CA 196.36 - 199.64 Massive Dac Lt, and Tuff. Distinct chloritized fragments appear after 198.30 (silicified, hemtized zone from 199.26 - 199.40m)	sharp at 186.44 sharp contact at 194.55	strong to moderate chlorite alteration throughout - fine leucoxene crystals (1-2%) dot surface of core	trace disseminated pyrite	Geochem #3689 186.5 - 188.9 Ground core from 196.36 to 197.2 1.5cm wide disc. of rhyolite dyke in broken pieces of dacite at 196.9m - possible dyke
199.64 to 200.10	D a c i t e, lapilli tuff and ash	Colour - grey Predominately a dacitic lapilli tuff, chloritized fragment up to 4cm in size, suspected in a fine dacitic ash matrix - % of fragments variable and defines a wide bedding - fine ash beds at 80-70° to CA and up to 1.5cm wide beds locally graded (tops of hole), weakly hematitic and drape over underlying breccia fragments - cherty in appearance.		wk hematite staining.		

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200.10 to 226.3	Rhyolite Flow "Roy Rhyolite"	Colour - light grey-green Grain Size - aphanitic <u>200.10-200.60</u> Rhyolite flowbreccia, lapilli tuff - reworked & bedded fine ash interbeds up to 1cm wide (graded- tops up hole?) <u>200.60-204.90</u> Flowbanded & flow brecciated rhyolite - typically flow brecciated to 203.3 with faint diffuse bordered more chloritic fragments (flowbands) in a lighter siliceous rhyolitic matrix - predominantly intact flowbanded rhyolite to 204.90 <u>204.90-206.37</u> massive aphyric rhyolite <u>206.37-208.30</u> Basalt dyke <u>208.30-226.3</u> Flow brecciated, flowbanded rhyolite - disrupted bands of aphanitic, aphyric light grey (1cm-10cm) and light green (up to 15cm) rhyolite - few 1-2cm wide weak shears @ 40° to CA from 223.67-224.2 Flowbanding @ 85-50° to CA		Wk chlorite alteration in rhyolite from 200.10- 204.90 - faint hematitic colouration from 200.5- 201.30 Wk but pervasive chlorite alt to 220 thereafter unit is not noticeably altered from 214-(226.3) rhyolite is dotted with 1%, 1-2mm red spots - crystals of hematite - weak pink hue to core from 224.5-225	Two, 3-4mm wide seams of massive ccp in chloritized rhyolite bx at 80° to CA at 200.15 Fine-crudely layered ccp in fine ash from 200.30-200.35 at 70° to CA (3% ccp) 1% fine ccp over 2 cm at 209.35	Geochem #3690 200.55-203.30 Geochem #3691 214.58-217.93 206.37-208.30 F e l d s p a r p o r p h y r i t i c (olivine?) basalt dyke at 80° to CA
226.3 to 233.68	Feldspar Porphyritic Andesite/ D a c i t e Dykes	Colour - light green Grain Size - aphanitic <u>226.3-230.0</u> 5% Feldspar phenocrysts (2-4mm) weakly glomeroporphyritic, subhedral phenocrysts - aphanitic andesitic groundmass. <u>230.0-230.5</u> Flowbanded rhyolite <u>230.5-233.68</u> Andesite-rhyodacite composite dyke, 230.5-231.40, feldspar porphyritic andesite dyke as above. <u>231.40-232.27</u> Feldspar, quartz porphyritic dacite dyke, distinctly quartz porphyritic from 231.60 to 232.27 <u>232.27-233.68</u> Aphanitic, mafic spotted (1-2mm) dacite dyke, weakly feldspar phyric at 233.68.	contacts lost c t c a t 230.5 at 45° to CA at 233.60 @ 40° CA	Weak epidote alt. from 226.3-231.40		

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		<p>From 270.55 to 272.13 large blocks (up to 15cm) of massive and flow banded rhyolite in a finer breccia matrix (frags <1cm) comprised of finer rhyolite fragments, hematized fragments, sericitized fragment and fine ash.</p> <p>Possible flow contact breccia internal to dome/flow at approx. 70° to CA</p> <p>Weak silicified shear at 290.50-290.70 at 45° to CA and a thin chloritic shear at 50° to CA at 291.9.</p> <p>Base of rhyolite flow from 301.40 to 307.76 characterized by</p> <ul style="list-style-type: none"> a) massive rhyolite to 301.40 b) spherulitic flowbanded rhyolite (at 80° to CA) from 301.40-301.70. Irregular chloritic wisps between light grey predominantly spherulitic areas/bands. c) 301.70-302.55. Rhyolite flowbreccia, weakly chloritized. d) 302.55 to 303.23 Spherulitic & chloritized flowbanded rhyolite with distinct shard-like, fragments of sericitized vitric rhyolite. e) 303.23-303.56 Rhyolite frags - lapilli size in a pink ash matrix. f) 303.56-304.5 Shard-like, sericitized rhyolite hyaloclastite fragments (angular) up to 3cm in a fine felsic ash sized matrix. g) flowbrecciated, flowbanded rhyolite - intact base of flow? from 304.5-304.76 h) mixed rhyolite/andesite breccia from 304.76 - 305.11. Chaotic mixture of massive, aphanitic and aphyric rhyolite fragments & fine andesite/dacite fragments (green) with minor grey ash matrix. <p>- Base of flow -</p>				<p>Fine quartz-feldspar porphyritic rhyodacite dyke from 296.3 to 298.36 @ 45° to CA</p> <p>Geochem #3694 300.55-303.58</p>

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233.68 to 305.11	Flowbanded and flow brecciated Rhyolite	<p>Colour - grey-green Grain Size - aphanitic Disrupted flowbrecciated flowbanded rhyolite from 233.68 to 241.40 - Fragments of light green aphanitic rhyolite in a lighter green to white siliceous rhyolitic matrix - local sections of intact flowbanded rhyolite consisting of light grey and green alternating bands (<5cm to mm scale) at 75° to CA - unit shows all stages of disruption of primary flowbanding - thin (<3cm) calcite qtz vein at 65-80° to CA</p> <p><u>241.40-247.55</u> Predominantly intact flowbanded rhyolite from 241.40 to 247.55 marked by alternating green & light grey-green laminae for <1m to 8cm wide @ 40° to CA <u>247.55-281.0</u> Intact flowbanded and flow- brecciated and flowbanded rhyolite as described from 233-241m Flowbanding at 90° - 35° to CA Hematitized fragments/xenoliths (1.5cm) in flowbanded rhyolite at 251.42m. Rhyolite flow contains approx. 1% light coloured and hematitized xenoliths from 256-268 (up to 4cm) Quartz vein shear/breccia at 45° to CA at 268.38 and 268.90 to 269.20 @ 40° to CA</p>		<p>Fresh looking from 233.68 to 239.75. From 239.75 to 265 unit is moderately chloritized accenuating the flowbanded (brecciated) structure of the flow. Pink, hematitic staining is pronounced from 243.55 to 247 with strong hematitic alteration in breccia (with few quartz/calcite veins at 10° to CA) from 243.57 to 243.95. Weak, faint sporadic hematite colouration from 247-253m</p> <p>Pink, hematized flowbands and fragments in flow breccia from 276.59 to 281.0. Narrow (5-10cm in width) bands of light green sericite alteration from 286.20 to 288.</p>	<p>Trace diss. pyrite at 240.15, adjacent to contact of dyke chalcopyrite mineralization with discrete bleb-like forms define a distinct band (10% ccp over 2cm) at 35° to CA - Sandwiched between ccp band & dyke is a fine rhyolite breccia possibly marking an internal flow contact.</p> <p>Trace disseminated and minor fracture pyrite throughout.</p>	<p>238.86-239.45 Quartz-feldspar porphyritic flow- banded rhyolite dyke nicks core at 5° to CA Identical dyke (QFP) at 40° to CA from 240.16- 240.27 with red hematitic spots (1-2mm) Geochem #3692 242.92-245.97 Geochem #3693 279.50-282.55</p> <p>Quartz-feldspar porphyritic rhyodacite dyke from 275.15 to 276.59 @ 40° to CA</p>

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305.11 to 312.60	Andesite - dacite Breccia Lapilli- Tuff and Lapilli block tuff -minor ash & tuff	Colour - green Mixture of green aphanitic aphyric massive and mafic amygdaloidal andesite frags (up to 15cm) light grey-grey/green aphanitic aphyric dacite frags and sericite/chlorite altered fragments in a fine ash matrix that is weakly hematized locally - distinct ash/crystal tuff (FP) beds (<10cm wide) near top of unit at 80-75° to CA - few shears at 50° to CA		Fragments are variably sericite/chlorite altered - strong pink hematite alteration to matrix and fragments locally.	Trace pyrite	Geochem # 3695 306.26-309.67
312.60 to 318.34	Feldspar Porphyritic Andesite Dyke	Colour - green 6% feldspar phenocrysts 1% calcite amygdules aphanitic groundmass	5 ° a t 312.6 and 5 0 ° a t 318.34			
312.60 to 328.27 E.O.H.	Andesite Lapilli tuff and ash	<u>312.6 - 320.85</u> Andesite lapilli tuff, matrix supported - 10-12% dark green to black aphanitic/aphyric chloritized andesite fragments (subangular) up to 2cm in size - <3% light grey subangular dacite fragments <1cm in size - fine andesitic ash matrix <u>320.85 - 328.27</u> Predominately a fine andesitic tuff (volcaniclastic and ash - minor lapilli tuff beds (<15cm) - weak chloritic shear at 35° CA at 324.70m.		Pervasive weak-moderate chlorite alteration - faint hematitic staining locally.	Fine fracture controlled pyrite (minor chlorite) at 321.28m.	Geochem #3696 325.22-328.27

LITHOGEOCHEMISTRY

MAJOR OXIDES

TRACE ELEMENTS

SAMPLE NUMBER	FROM (m)	TO (m)	MAJOR OXIDES										TRACE ELEMENTS					Zr					
			SiO ₂	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	FeO	MnO	TiO ₂	Ba	ppm Cu	ppm Zn	% Pb	ppm Ag	ppb Au						
3676	20.7	24.7	68.45	16.62	2.16	2.18	2.77	3.52	3.12	0.18	0.35	.051	22	47	.005			.016					
3677	61	64	61.88	15.59	0.74	3.45	4.95	2.03	4.54	0.15	0.54	.039	57	145	.008			.011					
3678	74.5	77	58.52	17.49	1.39	4.39	2.82	3.02	5.40	0.18	0.66	.048	82	140	.005			.008					
3679	78.4	81.1	49.99	21.76	0.32	4.19	0.22	5.06	9.81	0.14	0.99	.056	147	112	.014			.011					
3680	84.43	87.47	52.07	25.74	0.21	1.46	0.14	6.85	7.41	0.05	1.10	.052	9	100	.011			.008					
3682	96.62	99.67	54.54	22.51	0.26	3.94	0.46	5.43	9.90	0.15	1.02	.061	16	170	.014			.013					
3683	102.0	103.5	57.25	18.30	0.56	2.80	0.17	6.02	7.61	0.15	0.84	.109	113	195	.008			.012					
3684	Standard		57.98	17.08	7.29	3.77	2.91	1.62	6.66	0.17	0.71	.043	64	50	.008			.006					
3685	125.5	129.0	68.86	14.51	0.63	1.98	0.15	6.83	5.16	0.24	0.70	.239	380	265	.166			.007					
3686	137.4	140.51	67.15	14.32	0.38	3.35	0.19	5.71	6.39	0.23	0.65	.135	320	215	.05			.006					

Roy Dacites/
Andesites Pyroclastic
Rocks

LITHOGEOCHEMISTRY

MAJOR OXIDES

TRACE ELEMENTS

SAMPLE NUMBER	FROM (m)	TO (m)	MAJOR OXIDES										TRACE ELEMENTS					Zr							
			SiO ₂	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	FeO	MnO	TiO ₂	Ba	ppm Cu	ppm Zn	% Pb	ppm Ag	ppb Au								
3687	168.0	171.9	53.22	20.34	0.29	6.81	0.38	4.69	8.38	0.27	0.94	.046	20	208	.05			.010							
																									Roy Dacites/ Andesites Pyroclastic Rocks
3688	181.9	184.5	60.70	17.72	0.52	3.02	1.09	5.35	6.85	0.18	0.81	.184	50	264	.044			.008							
3689	186.5	188.9	57.31	19.50	0.37	5.93	1.71	3.51	7.76	0.26	0.85	.043	24	173	.017			.008							
3690	200.55	203.30	75.35	11.93	0.20	2.51	1.85	2.57	2.16	0.10	0.16	.020	8	92	.044			.012							
3691	214.58	217.93	74.24	14.73	0.17	2.88	2.75	2.58	2.06	0.08	0.21	.025	4	62	.005			.016							Roy Rhyolite
3692	242.92	245.97	72.03	14.97	0.35	3.69	1.82	2.74	2.86	0.10	0.20	.034	4	74	.009			.018							
3693	279.5	282.55	72.65	14.43	0.21	3.10	2.63	3.10	2.18	0.07	0.19	.049	7	61	.011			.016							
3694	300.55	303.58	74.96	13.88	0.22	3.24	0.83	3.52	2.46	0.07	0.21	.053	40	52	.007			.012							
3695	305.26	309.67	66.39	15.00	0.25	3.43	2.39	2.84	3.97	0.11	0.47	.026	16	73	.006			.012							
																									Lower Dacites/ Andesites
3696	325.22	328.27	57.42	19.35	0.48	6.11	3.51	2.42	8.57	0.27	1.10	.024	12	150	.021			.008							

Hole No. IR 85-01

Entered by _____

Logged by Harold Gibson

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ASSAY SHEET

Sample Number	From (m)	To (m)	Estimate		Length (m)	% Cu	% Zn	% Mo	gm/T Ag	gm/T Au	oz Ag	oz Au	% Na ₂ O	% MgO	% Fe	PPM Cu	PPM Zn	PPM Pb	PPM Ag	PPB Au			
			Cu	Zn																			
3801	157.72	158.43			0.71	.060	.08	.004	2.0	.04	.06	.001											
3808	126.2	126.95			0.75	.031	.01		1.8	.01	.05	.001											
3809	128.24	128.72			0.48	.008	.02		0.4	.01	.01	.001											
3810	145.80	147.10			1.3	.018	.03		1.7	.02	.05	.001											
3683	102.0	103.5			1.5	113ppm	195ppm		1.4	.01	.04	.001											

DRILL HOLE SUMMARY
IR-85-02

<u>Metres</u>	<u>Comments</u>
0 - 263.20m	Roy Dacite package, schloritized and Na ₂ O depleted from 88 - 173m and at 235m. - 0.248% Cu/.85m in chloritized dacite @ 29.65m - 0.155% Cu, 0.54% Zn over 1.15m in weak sericite altered dacitic vitric tuff @ 150.55m - 2.33% Cu/0.32m @ 171.65m in chloritized dacitic vitric tuffs - 1.48% Cu, 0.65% Zn/0.23m @ 186.74m in chloritized dacitic vitric tuffs
263.20 - 315.95m	Roy Rhyolite, flowbanded, massive and flow-brecciated Rhyolite, Na ₂ O depleted from 263 - 315m. - no significant sulphides
315.95 - 337.11m	Lower Andesite/Dacite package - Na ₂ O depleted - 0.165% Cu/0.65m @ 334.85 in chloritized dacitic vitric tuffs - sulphide rich fragments (1%) in heterolithic lapilli tuff from 315.95 - 334.22

CORPORATION FALCONBRIDGE COPPER

DRILL HOLE RECORD

X METRIC UNITS
 ○ IMPERIAL UNITS

HOLE NUMBER IR 85-02	GRID	FIELD COORDS	LAT.	DEP.	ELEV. 657m	COLLAR BRNG. 217°	COLLAR DIP -61	HOLE SIZE BQ	FINAL DEPTH 337.11m
PROJECT 313	CLAIM #	SURVEY COORDS.				DATE STARTED: Oct 13/85 DATE COMPLETED: Oct 23/85	CONTRACTOR: M & B CORE STORAGE: CASING:		

PURPOSE: To test Roy Dacite and contact with underlying Roy Rhyolite below a surface Na₂O depletion zone + mineralization in IR 81-9

RQD LOG :
COLLAR SURVEY : PULSE EM SURVEY X
MULTISHOT SURVEY

ACID TESTS				TROPARI TESTS			MULTISHOT DATA		
DEPTH ()	CORRECTED ANGLE	DEPTH ()	CORRECTED ANGLE	DEPTH (m)	AZIMUTH	DIP	DEPTH ()	AZIMUTH	DIP
30.48m	61°			55	221°	-57°			
	60°			181	220°	-50°			
91.4	60-61°			287	226°	-43°			
122	to faint to read								
152	59-60° to faint to be sure								
182	52°								
213	51°								
246	46°								
274	47°								
305	46°								
336	to faint to read								

HOLE NO IR 85-02

LOGGED BY Harold Gibson

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
0 to 10.97	Casing O/B					
10.97 to 11.42	Amygda- loidal Feldspar Porphyritic Andesite Dyke	Colour - green Grain Size - aphanitic 5-6% calcite/quartz anygdules up to 1.5cm long X 4mm wide - 3% subhedral feldspar phenocrysts - aphanitic groundmass	contact at 11.42 @ 40-45° to CA			
11.42 to 14.40	Chloritized Tuff	Colour - green Grain Size - aphanitic Massive, homogeneous, non-bedded aphanitic tuff with 10-15%, 1-4mm chloritic, black lapilli fragments (vitric?) - quartz/calcite veins @ 60-30° to CA		Pervasive chlorite alteration altered andesite or dacite tuff	Trace pyrite/odd specks of ccp	Aphanitic, grey rhyolite dykes from 11.42-12.40 CA and 12.82- 12.95 at 40° to CA Geochem #3697 11.42-14.40
14.40 to 17.19	Quartz: Feldspar Porphyritic Rhyodac. Dyke	Colour - grey-green Up to 6% 2-4mm feldspar phenocrysts Up to 8% 2-3mm quartz phenocrysts Pred feld porphyritic to 16.0m, pred. quartz porphyritic from 16.0-17.19.	Contact at 17.19 at 20° to CA			
17.19 to 18.30	Chloritized Tuff	Same as between 11.42-14.40 - irregular calcite/quartz veins at 5°-85° to CA				

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
18.30 to 28.00	Blocky Rhyodacite Dyke	Colour - orange-grey Grain Size - aphanitic Aphanitic, aphyric rhyolite-rhyodacite dyke Very blocky with fractures at 85°-40° to CA - thin calcite/qtz veins.				Screen of chloritized green tuff from 19.57-20.0m and from 20.38-20.85m
28.00 to 28.72	Dacite lithic lapilli tuff	Colour - light grey-green Light grey-white aphanitic felsic fragments <2% light green, faint/fuzzy chloritic vitric frags <6% - aphanitic matrix		fresh	trace pyrite	
28.72 to 44.27	Dacite lapilli tuff & tuff	Colour - light grey-green to dark green <u>28.72 to 31.0m</u> Dacite lapilli tuff - odd felsic, light coloured fragment recognized but predominately fine chloritic lapilli in a chloritic matrix. - few thin shears and fractures at <40° to CA <u>31.0 to 44.27</u> Homogeneous chloritic dacitic lapilli tuff-tuff. Where least altered unit is composed of fine (<0.6cm) chloritic vitric frags (vitric lapilli tuff - 15%) & odd mafic phenocrysts in an aphanitic light grey-green dacitic matrix. - few calcite/quartz veins at 25-60° to CA - core broken & blocky - carbonate/chlorite shear at 25° to CA from 35.25-35.36m.		- Moderate chlorite alteration from 287.2 to 31.0m with some secondary brecciation of the lapilli tuff and veining by fine cherty quartz & pyrite - moderate chlorite alteration with virtually no secondary brecciation from 31.0 - 36.10m <u>36.10 to 44.27</u> Strong pervasive black chlorite alteration of dacite-leucoxene crystals stand out. Secondary brecciation with fine cherty quartz veining after 36.40 and strong hematitic quartz veining from 37.40 - 44.27. Brecciation and hematitic chert veining similar to that observed peripheral to the Roy Prospect. Most intense from 39.50 - 40.75 where hematitic quartz - jasper accounts for 65-70% of core. Distinct frags impossible to recognize is chloritized dacite.	Fine disseminated and fracture pyrite throughout (<1%) although up to 2-3% pyrite over 1cm in narrow shears that parallel fractures at <35° to CA - bleby chalcopyrite in dacite from 30.0-30.45, up to 2% ccp over 2m intervals, <1% ccp overall Trace pyrite from 36.10-44.27	Assay #3805 29.65-30.50m ccp-py in chl dac. Geochem #3698 32.30-35

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>	
44.27 to 52.0	Andesite Dyke	Colour - green Grain Size - aphanitic Weakly feldspar porphyritic (1%, 2mm) andesite, aphanitic groundmass - Andesite is broken and has a shattered appearance - quartz/calcite and epidote veins at 60° and 40° to CA - broken gouged core from 49.0-50m.	contact at 52.0 at 70°? at 44.27 @ 60°	weakly chloritic and epidotized		Cut by Feldspar porphyritic rhyodacite dyke from 47.50 - 48.62 at 65° to CA Geochem #3699 41.15-44.27	
52.0 to 83.05	Dacite tuff/ lapilli tuff	Colour - dark-light green <u>52.0-55.0</u> Moderately chloritized Dacitic lapilli tuff Fine quartz veins @ 60° to CA - foliated at 40° to CA with some chloritic gouge between 54.0-54.25 <u>Fault</u> <u>55.0-59.0</u> Broken, ground core throughout this interval - Dacitic tuff/lapilli tuff massive - chloritic gouge shears at 45° to CA at 55.10 <u>59.0-79.15</u> Fine dacite tuff, massive small (<1cm) chloritic spots may be vitric frags (<10%) - green to grey-green dacitic matrix - few quartz filled fractures at 20-40° to CA - blocky core Chloritic gouge (Fault) at <5° to CA from 65.35 to 65.83 - rather monotonous, homogeneous fine-grained tuff - quartz/chlorite fractures/slips at 65° to CA and <30° to CA		<u>52.0-55.0</u> Dacite lapilli tuff veined + brecciated by grey and pink (hematitic@ cherty quartz	<u>52.0-55.0</u> Trace pyrite		
				<u>55.0-59.0</u> Weakly chlorite alteration	odd speck of pyrite		
				<u>59.0-79.15</u> weak chlorite alteration faint hematitic staining - local epidote (light green) alteration	<u>59.0-79.15</u> Trace pyrite	63% recovery between 65.83- 68.88 - blocky ground core. R e c o v e r y normally > 95%	

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		<u>79.15-83.05</u> Dacite lapilli tuff - subangular dark green chloritized fragments from 3cm to <0.5cm in a light grey dacitic aphanitic matrix <20% fragments, matrix supported, poorly sorted, massive i.e. non bedded 15cm of chloritic gouge at 81.50m		Fresh looking	Trace to 10% pyrite locally in fragments	Geochem #3700 74.98-78.03
83.05 to 84.19	Dacite Dyke	Colour - light green-grey Fine, 1-3mm amygdules at margins (4%) with large (up to 1cm - 5%) amygdules in interior. Trace feldspar phenocrysts, aphanitic groundmass	contacts at 90° to CA			
84.19 to 88.10	Dacitic Lapilli Tuff	Colour - grey-green Matrix supported, poorly sorted lapilli tuff characterized by approx. 20% irregular, angular light green aphanitic porphyritic (feldspar?) fragments (up to 3cm) with delicate tails and boundaries (some internal foliation), <1% white dacitic lithic fragments and <1% black chlorite fragments (<1cm) in an aphanitic (<1% feldspar crystals, <2mm) light grey to grey groundmass - massive, non bedded unit.	Contact at 88.10 near perpendicular to CA and sharp	Remarkably fresh	Minor, <1% pyrite is some dacitic fragments from 87.17-87.35m.	From 87.70-88.10 unit is a massive f e l d s p a r porphyritic light grey dacite, -could be a large fragment or dyke - impregnated with up to 1% diss. pyrite locally.

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>	
88.10 to 92.65	Graphitic argillaceous Breccia	Colour - black Unit consists of light grey to grey green dacitic fragments from 3mm - 4cm. Largest fragments occur within 30cm of contact at 88.10 and are similar to those in dacite breccia above unit. Matrix is a fine grained graphitic argillaceous sediment. Matrix supported, poorly sorted breccia. Percentage and size of fragments tends to decrease with depth.				Contains about 1% irregular clots and blebs of pyrite up to 2cm from 88.10 to 89.0. Clots characterized by irregular sinuous forms with a light, bright yellow f.gr margin and dull aphanitic interior - sinuous form of some pyrite resembles disrupted beds. - minor disseminated pyrite from 89.0 - 92.65	Orange-grey weakly feldspar porphyritic rhyodacite dacite dyke from 89.0 to 90.93 at 45° to CA Geochem #3701 88.10-92.65
92.65 to 96.45	Massive Dacite Dyke	Colour - grey Finely amygdaloidal margins.	contact at 92.65 @ 80°?				
96.45 to 105.46	Dacite Lapilli tuff to lapilli block tuff	Colour - grey Badly broken, blocky core in numerous chips <4cm long Breccia consists of lapilli to block size fragments of a) grey-green aphyric dacite b) grey feldspar porphyritic? mottled textured dacite c) and minor black chlorite-rich fragments - matrix supported, poorly sorted massive breccia; frags range from >1cm to 10cm (+) - grey aphanitic matrix - irregular, calcite veings (minor quartz) at 40°-50° & <10° to CA. Core badly broken from 99.36 - 103m - Fault?			Trace - nil pyrite	Lithic lapilli tuff - tuff breccia	
105.46 to 108.31	Rhyodacite dyke	Feldspar porphyritic white margins, light green, flow-banded interior.	contacts at 108.31 @ 40° to CA	Rusty limonitic staining along fractures locally.		Screen of dacitic breccia from 107.88 to 108.05	

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
108.31 to 109.68	D a c i t i c vitric lapilli tuff-Tuff	Colour - grey Massive unit consisting of <10% black chloritic, aphyric fragment (vitric?) and <1% light felsic lithic fragments in a grey, aphanitic dacitic matrix - nonbedded unit	contact at 109.68 @ 70° CA	Weak chlorite alteration		
109.68 to 128.60	D a c i t i c lithic lapilli tuff	Colour - grey Massive, matrix supported breccia. Fragments are subangular to angular and range in size from 3mm to 5cm. Fragments include: a) aphanitic, aphyric light green dacite - sericite altered? b) white, aphyric felsic frags c) grey to black andesitic frags - massive grey dacitic matrix Unit is broken + sheared from 120.70 to 121.70 - minor gouge - <u>Fault</u> @ 60-70° to CA - slips also at 20° to CA - tends to be sheared near dyke contacts Fine grained. Dacitic dyke or tuff (no chilled contacts) from 127.12-127.33 at 60° to CA		Fresh looking, weak sericite alteration from 124.7-128.60	Minor disseminated pyrite from 109.68 - 124.66. Approx. 1% pyrite as dissemination and clots up to 2cm with some ms pyrite pyrite rich fragments from 124.66 to 125.60 <1% disseminated and bleby pyrite from 125.60 - 128.60	F e l d s p a r porphyritic (w e a k l y amygdaloidal) andesite dykes from 11.58-112.8 at 45° to CA 113.90 - 114.87 @ 40° to CA 115.5 - 115.65 at 45° to CA. This interbed (dyke?) of dacite tuff similar to that at 108.31m from 111.20 - 111.27m F e l d s p a r porphyritic dacite dyke from 118.0 - 120.70 at 50° White QFP dyke from 123 - 123.67 @ 60° to CA Mafic spotted (crystals?) Andesite dykes @ 121.70 - 122.45 @ 45° 124.05 - 124.66 - shallow 124.94 - 125.05 @ 60*o 125.60 - 125.75 @ 30° Geochem #3702 114.60 - 118.0

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
128.60 to 160.75	Dacitic Vitric Lapilli Tuff	<p>Colour - light green grey Massive, poorly sorted, matrix supported dacitic breccia. Damn near a monolithologic breccia with up to 20% fragments (subangular - angular irregular frags to +10cm) of dark green aphyric, leucoxene bearing chl/sericite alt vitrophyre? Frags have a distinct parallel alignment @ 50-60° to CA <1% light felsic fragment (<1cm) - matrix is an aphanitic to fine-grained tuff/ash</p> <p>Larger vitric fragments (up to 10cm) from 128.60 - 132.45 Primarily finer-fragmental with dark green vitric fragments <1cm from 132.45 - 141.25m - few calcite/quartz veins @ 60° + <30° to CA. Noticeably larger fragments after 141.25 to 146m. Fragments moderately to strongly chloritized aphyric and leucoxene bearing. Frags up to 5cm. Fewer larger fragments towards 146m. Primarily a fine, vitric tuff after 146m to 160.75, characterized by up to 25-30%, <1cm, light to dark green aphyric subangular vitric fragments dotted with leucoxene - fragment alignment defines a foliation @ 80° to CA - 70° to CA</p>	Contact at 128.60 at 65°	<p>Weak to moderate chlorite alteration (pervasive)</p> <p>From 147 to 155 core is cut by singular + localized networks (over 10cm wide) of chlorite/minor quartz veins/fractures at irregular angles to CA. Unit is strongly chloritized and hematized from 153.65 to 155m. - good chl envelopes developed mantling some quartz/chl/ccp veins.</p> <p>From 155 to 160.75. Dacitic vitric lapilli tuff is veined and in situ brecciated by predominately fine pink hematitic quartz and to a lesser extent black chlorite/quartz veins.</p>	<p>Finely disseminated and clotty pyrite, tr. ccp in both fragments and matrix - <1% py. From 150.55 to 151.70, dacite is cut by a quartz vein/vein breccia which contains disseminated and bleby ccp=1% and lesser pyrite - <1% sphalerite locally</p> <p>Veining for 155 - 160.75 is not associated with any appreciable sulphide but fine <<1% diss. pyrite + tr ccp are present.</p>	<p>Geochem #3703 142.03 - 145.08 Assay # 3802 150.55 - 151.70 Geochem #3704 152.3 - 155.0</p>
160.75 to 162.59	Quartz Feldspar Porphyritic Dyke	<p>Colour - grey 3% subhedral feldspar phenocrysts 5% light grey anhedral quartz phenocrysts - aphanitic groundmass</p>	Contact at 160.75 @ 25° to CA and at 162.59 @ 60° to CA			

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
162.59 to 257.25		<p><u>162.59 - 164.23</u> Dacite lapilli tuff to tuff breccia</p> <p><u>164.23 - 165.66</u> Homogeneous, chloritized Dacite tuff</p> <p><u>165.66 - 165.75</u> Thin bedded to laminated pink hematitic chert. trace pyrite tops up hole Bedding @ 70-75° to CA</p> <p><u>165.75 - 187.7</u> Chloritized dacitic lapilli tuffs and tuff. Upper 15cm of unit in a hematitic chert matrix directly below bedded chert. Appears to be a fine, homogeneous tuff (lacks fragments) from 176.84 to 187.7</p> <p><u>187.7 - 257.25</u> Fine dacitic vitric lapilli tuff with aphyric subangular 1cm or less green dacitic lapilli (20%) in a light green dacitic matrix - few mafic prismatic crystals <3mm in matrix. - quartz vein at 10-5° & 60° to CA and locally at 75-80° to CA - frags weakly aligned @ 70-65° to CA</p>		<p><u>162.59 - 164.23</u> in situ brecciated Dacitic tuff, veins of sericite, chlorite & pink hematitic quartz</p> <p><u>164.23 - 165.66</u> Strongly + pervasively chloritized dacite tuff, faint hematitic staining</p> <p><u>165.75 - 187.17</u> Strong, pervasive chlorite alteration - difficult to discern individual fragments - some in situ brecciation by pale green grey and pink hematitic quartz/chert - finely fracture - dotted with fine leucoxene throughout</p> <p><u>187.7 - 257.25</u> Weak to moderate chlorite alteration - pervasive - pink hematitic staining with diss pyrite from 189.3 to 190.70 - local area of chlorite quartz veining and weak in situ brecciation especially from 207-211m.</p>	<p><u>162.59 - 154.23</u> minor, <1% disseminated and clotty pyrite</p> <p><u>164.23 - 165.66</u> minor diss py - good - 1% ccp in 1.5cm wide quartz vein @ 85° to CA @ 165.38</p> <p>Spectacular chalcopyrite mineralization in chloritic quartz veins from 171.65 to 171.97 - approx. 2-3% ccp over interval, with 20% ccp over 5cm at 171.88m : veins at 85° to CA</p> <p>4-5% bleby ccp, minor sphal mineralization with irregular quartz veins from 186.74 - 186.84</p> <p>1% ccp in 1cm wide quartz vein/chlorite shear at 40° to CA at 187.6</p> <p>2% ccp in 3.5cm wide zoned quartz vein with chloritic envelope at 25° to CA at 191 m. - ccp in quartz vein - broken core at 190.95m</p> <p>- chalcopyrite in jasper chlorite veins @ 210.90 and 211.30. Vein at 211.30 contains 5% ccp over 2cm wide vein</p>	<p>Geochem #3705 169 - 173 Assay #3803 171.65 - 171.97</p> <p>Quartz-Feldspar porphyritic rhyolite dyke at 65° to CA from 175.53 - 176.84m</p> <p>1 : c m wide andesite dyke at 35° to CA @ 196.9m</p> <p>Geochem #3706 197.0 - 200m Assay #3804 186.74 - 186.97</p>

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		Weak, chloritic shear at 5° to CA at 227.5m		Massive red jasper & white quartz vein at 40° to CA from 223.8 to 223.88 - 1% disseminated pyrite	Minor, 1%, disseminated and bleby pyrite with trace ccp in hematitic, quartz, chlorite veins at <20° to CA from 235.40 - 238.75m	Geochem #3707 228.90 - 232.0
		Strong chloritic shear with gouge at <10° to CA from 231.15 to 231.46		- other narrow (<2cm wide) jasper/quartz veins at 40° to CA		Geochem #3708 235.40 - 238.75
		Broken core chips from 250.38 to 250.65		- numerous red hematitic - jasper & white quartz veins plus minor chlorite at 10° to CA from 241.5 to 247.2m		
				- minor diss pyrite & trace ccp with veins		
				Epidote-jasper veins from 251.80 - 253.0m		
257.25 to 263.20	Chloritized Dacite/ Andesite Lapilli Tuff- Tuff breccia	Colour - green Contact at 257.25 is gradational and defined by appearance of pink-hematitic siliceous matrix separating angular to subangular fragments (up to 10cm) of chloritized dacite tuff. Fragments constitute approx. 25-50% of unit except between 258.74 and 261.82m where the unit is massive in appearance. - strong chloritic shear with broken core from 257.5 to 258.74 @ <40° to CA	contact at 263.20 at 65° contact at 257.25 grada- tional	Moderate to strong, pervasive chlorite alteration from 257.25 to 258.74 and from 261.9 to 263.20 - faint pink colour of matrix suggests weak hematitic alteration	Trace disseminated pyrite	Geochem #3709 258 - 263.0

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
263.20 to 315.95	Flowbanded, massive and flow-brecci- ated rhyolite flow "Roy Rhyolite"	<p>Colour - light grey-pink Grain Size - aphanitic aphyric Ctc with overly breccias sharp and conformable at approx. 65^o to CA <u>263.20 - 269.0</u> Predominantly flow brecciated massive rhyolite. Angular to subangular blocks from >1cm to <10cm comprise a chaotic non sorted, matrix supported breccia. Blocks sit in a light grey siliceous matrix - locally in situ brecciated with blocks that fit together as in a puzzle. Frag. are of aphyric, massive aphanitic rhyolite. Green chloritized fragments (Dacite?) from bulk of breccia which is matrix supported from 263.42 to 264.0, contacts at 70^o to CA <u>269.0 - 284</u> Predominantly a light pink-grey massive flowbanded and locally flow-brecciated rhyolite flow - typically fine (<2cm) flowbands characterized by alternating light green, grey, and pink colours - local pockets of breccia composed of rhyolite frags (massive & flowbanded) in a pink siliceous matrix (gradational contacts with massive rhyolite) 2cm chloritic shear at 40^o to CA @ 272.44 Flowbanding @ 50^o to CA</p>		<p><u>263.20 - 269.0</u> Pervasive light pink colouration to fragments & matrix reflects weak hematitic alteration</p> <p><u>269.0 - 296.10</u> Pervasive, weak pink hematitic alteration</p>	trace to nil pyrite	<p>Geochem #3710 263.30 - 267</p> <p>Breccia from 263.42 - 269.0 with chloritized fragments maybe an interbed of chloritized, matrix supported andesite or dacite lapilli tuff.</p> <p>Amygdaloidal andesite dyke from 277.18 to 278.48 at 60^o to CA - cut by calcite veins at 70^o to CA</p>

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		<p><u>284 - 296.10</u> Predominantly brecciated flowbanded and massive aphyric/aphanitic rhyolite with some sections of intact massive + flowbanded rhyolite - breccia comprised chiefly of pink/grey rhyolite but also by grey-green altered rhyolite? Breccia typically framework supported and chaotic but locally matrix supported (siliceous grey/pink matrix) - probable flow breccia - 2cm wide chloritic gouge/shear zone at 65° to C.A. at 290.70, - few thin calcite veins at 15°, 50° + 70° to CA</p>				
		<p><u>296.10 - 306.40</u> Grey-white spectacular flow breccia with disrupted + rotated fragments of both flowbanded and massive rhyolite in a light grey-white siliceous aphanitic, aphyric rhyolitic matrix. Predominately framework supported, locally insitu brecciated but over short intervals (<20cm) is matrix supported. Fragments are angular and range from >1cm to <10cm. Flowbanded and to a lesser extent massive frags change from grey-light green to dark green & black chloritic frags resemble chloritic hyaloclastite and vitrophyric fragments observed near lobe/flow contacts in subaqueous rhyolite flows in Noranda & Iceland.</p>		<p><u>296.10 - 306.10</u> massive, fresh rhyolite. Chloritic frags from 304.70 - 306.40 are probably hydrated + chloritized vitrophyre and not a result of secondary alteration.</p>		<p>Fine-grained, amygdaloidal andesite dyke nicks core from 307.40 - 307.67 at <20° to CA and cuts across core from 307.71 to 307.94 @ 45° to CA</p> <p>Geochem #3711 297.48 - 300.50 Geochem #3712 304.7 - 306.40</p>

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		<p><u>306.40 - 315.95</u> Massive, grey green flowbanded, weakly insitu brecciated rhyolite flow. Irregular but elongate quartz amygdules or lithophysae (<5%) up to 2cm from 312 to 314, occurring in distinct bands (up to 10cm wide) Weak spherulitic coronas developed on amygdules. Base of flow from 314.80 to 315.95 is brownish grey in colour, distinctly flowbanded at 70° to CA</p>	<p>contact at 306.40 gradation -a1</p>	<p>Weak, hematitic alteration giving the core a speckled appearance from 312 to 314.80m</p>	<p>1% disseminated ccp and 2% pyrite over 2cm at basal contact of flow at 315.95</p>	<p>Amygdaloidal andesite dyke at 60° to CA from 315.3 - 315.84</p>
315.95 to 334.22	Heterolithic Andesite/ Dacite Lapilli tuff	<p>Colour - dark grey-green Breccia immediately below contact (15cm) contains brown altered rhyolite hyaloclastite fragments otherwise breccia consists of a) aphanitic, grey to pink (hematite altered) aphyric felsic fragments that are typically subangular and range from <1cm to 7cm 5-8% b) aphanitic, black, leucoxene bearing angular, irregular chloritic fragments that range in size from >1cm to 5cm 20-25% c) light green aphanitic epidote-altered fragments, subangular, <3cm in size and locally porphyritic (found more commonly near top of unit) <5% Breccia is moderately well sorted with respect to shape and size and is matrix but verging on framework supported.</p>		<p>Difficult to assess - matrix looks fresh however leucoxene - bearing chloritic frags are definitely altered and felsic fragments (Dac-Rhyodac) are hematite or epidote coloured.</p>	<p>Sulphides, chiefly pyrite occur in variably hematitic felsic fragments where they may constitute from 10% to 90% of the clast (locally 100%) - matrix typically contains only trace pyrite except where numerous sulphide-bearing frags occur. Pyrite does occur in chloritic frags but is less common, an exception being @ 323.25 where several chloritic fragments up to 5cm in size contain up to 10% ccp and the breccia matrix contains both pyrite + chalcopyrite for 10cm on either side of the fragment.</p>	

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		<p>Matrix is dark grey in colour, aphanitic and aphyric - unit becomes more massive towards base where it is a fine tuff and lapilli tuff * Unit for 339.90 - 334.22 is massive, and more felsic with sharp sheared contacts to 60°, probable dyke</p>			<p>Chalcopyrite (30%) also occurs in an irregular quartz vein at 70° to CA @ 326.93m Pyrite-rich fragments constitutes <1% of the fragment type from 315.95 to 323.20, but from 323.20 - 334.22, constitute 2-3% of the clasts - Massive pyrite fragments, may be completely replaced felsic fragments? Fragments are "replaced" by pyrite along margins or within a central core zone</p>	<p>Geochem #3713 324.15 - 327.20 Assay # 3807 327.9 - 328.50</p>
334.22 to 337.11 E.O.H.	Chloritized Dacite Vitric Lapilli Tuff	<p>Colour - green Fine lapilli tuff with up to 20% aphanitic, aphyric green fragments <1cm in size oriented at approx. 75° to CA - matrix is a light grey-green and aphanitic where not chloritized</p>	contact at 334.22 sharp at 60°	Pervasive moderate to strong chlorite alteration with well developed chlorite selvages enveloping some quartz-chalcopyrite-pyrite veins	<p>From 334.53 to 337.11 dacite is cut by light to dark grey f.g. quartz veinlet at various core angles. Veins contain fine disseminated + bleby pyrite and chalcopyrite. Interval from 334.85 - 335.74 contains good chalcopyrite in quartz veins but will average <1% overall - up to 5% ccp in 1cm wide quartz veins</p>	<p>Fine grained andesite dyke from 336.90 to 337.05 at 70° to CA Geochem #3714 334.22 - 337.11 Assay #3806 334.85 - 335.74</p>

LITHOGEOCHEMISTRY

MAJOR OXIDES

TRACE ELEMENTS

SAMPLE NUMBER	FROM (m)	TO (m)	MAJOR OXIDES										TRACE ELEMENTS						Zr				
			SiO ₂	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	FeO	MnO	TiO ₂	Ba	ppm Cu	ppm Zn	% Pb	ppm Ag	ppb Au						
3697	11.42	14.40	58.15	16.51	3.51	4.89	3.80	1.80	6.91	0.29	0.76	.025	40	144	.005			.008					
3698	32.3	35.0	60.10	17.21	0.47	4.36	2.00	3.62	5.43	0.17	0.83	.047	56	164	.009			.018					
3699	41.14	44.27	53.95	19.46	0.68	5.30	2.13	3.85	8.56	0.11	0.95	.057	10	100	.010			.019					
3700	74.98	78.03	60.70	14.76	0.74	5.83	2.24	1.59	6.65	0.15	0.85	.022	12	146	.016			.021					
3701	88.10	92.65	50.07	20.98	0.33	2.66	1.41	5.17	5.05	0.06	0.92	.060	44	108	.014			.013					
3702	114.6	118.0	73.88	14.29	0.74	1.81	1.43	3.57	1.87	0.08	0.20	.091	26	50	.005			.007	Roy Dacites/ Andesites				
3703	142.03	145.08	57.16	18.97	0.27	5.13	1.11	4.00	6.97	0.22	0.83	.037	52	176	.010			.010					
3704	152.3	155.0	52.14	20.58	0.17	7.38	0.27	4.16	8.82	0.29	0.92	.042	72	188	.015			.013					
3705	169	173	60.61	17.69	0.44	7.47	0.05	3.54	7.53	0.28	0.85	.038	30	148	.018			.012					
3706	197	200	57.13	16.78	1.93	5.37	2.06	2.79	6.64	0.34	0.76	.072	96	136	.013			.009					
3707	228.9	232	60.13	18.81	0.40	5.81	2.19	2.92	7.09	0.35	0.85	.060	20	140	.018			.011					
3708	235.4	238.75	59.73	16.84	0.36	5.02	1.38	3.06	6.27	0.29	0.76	.072	74	126	.012			.008					
3709	258	263	54.51	17.44	0.12	5.81	2.30	2.37	6.60	0.24	0.70	.029	72	125	.012			.009					
3710	263.3	267	70.61	14.42	0.02	3.44	1.29	30.4	2.83	0.11	0.19	.046	40	60	.012			.016					
3711	297.48	300.5	72.42	15.11	0.01	5.05	0.08	3.29	2.98	0.10	0.21	.033	28	72	.020			.017					
3712	304.7	306.4	72.21	15.54	0.01	5.07	0.09	3.42	2.87	0.10	0.21	.036	12	60	.012			.017	Roy Rhyolite				
3713	324.15	327.20	61.30	17.01	0.15	5.69	1.73	2.67	7.96	0.24	0.90	.020	12	148	.022			.007					
3714	334.22	337.11	60.56	18.94	0.13	6.31	0.05	4.05	7.37	0.25	0.88	.028	20	146	.015			.006	Lower Dacites/ Andesites				

Hole No. IR 85-02

Entered by _____

Logged by Harold Gibson

Page No. 15

ASSAY SHEET

Sample Number	From (m)	To (m)	Estimate		Length (m)	% Cu	% Zn	% Pb	gm/T Ag	gm/T Au	OZ Ag	OZ Au	% Na ₂ O	% MgO	% Fe	PPM Cu	PPM Zn	PPM Pb	PPM Ag	PPB Au				
			Cu	Zn																				
3805	29.65	30.50			0.85	0.248	0.13		2.8	0.05	0.08	.001												
3802	150.55	151.70			1.15	0.155	0.54		2.5	0.01	0.07	.001												
3803	171.65	171.97			0.32	2.33	0.04		10.2	0.03	0.3	.001												
3804	186.74	186.97			0.23	1.48	0.65		8.2	0.04	0.24	.001												
3807	327.9	328.50			0.60	0.009	0.02		0.2	0.03	0.01	.001												
3806	334.85	335.74			0.65	0.165	0.03		3.9	0.03	0.11	.001												
3701	88.10	92.65			4.55	44ppm	108ppm		1.0	0.02	0.03	.001												

Drill Hole Summary

IR 85-03

Metres

Comments

0 - 203.65	Roy Dacite package, Na ₂ O depleted from 120 - 150m - Ba enriched (2410 ppm) @ 78m - 0.3% Cu/6m @ 38m is sheared pyritic tuff?
203.65 - 224.10	Dacite flow and flow breccia not altered or mineralized
224.60 - 251.80	Roy Rhyolite, massive, flowbanded and flowbrecciated flow - Na ₂ O depleted tr. pyrite - unit markedly thinner than on surface
251.80 - 281.32	Lower Andesite/Dacite package - Heterolithic lapilli tuff marker - Na ₂ O depleted below rhyolite contact - tr pyrite
281.32 - 297.79	Dacite Flow breccia - not altered, tr.pyrite

CORPORATION FALCONBRIDGE COPPER

METRIC UNITS
 IMPERIAL UNITS

DRILL HOLE RECORD

HOLE NUMBER IR 85-03	GRID	FIELD COORDS	LAT.	DEP.	ELEV.	COLLAR BRNG. 217°	COLLAR DIP -85	HOLE SIZE BQ	FINAL DEPTH 297.79m
PROJECT 213	CLAIM #	SURVEY COORDS.				DATE STARTED: Oct 23/85 DATE COMPLETED: Nov 2/85	CONTRACTOR: M & B CORE STORAGE: 0 - 6.9m		
PURPOSE								RQD LOG <input type="checkbox"/>	PULSE EM SURVEY <input checked="" type="checkbox"/>
ACID TESTS				TROPARI TESTS			MULTISHOT DATA		
DEPTH (m)	CORRECTED ANGLE	DEPTH ()	CORRECTED ANGLE	DEPTH (m)	AZIMUTH	DIP	DEPTH ()	AZIMUTH	DIP
30	85.5			118	218°	-84			
61	85			288	195°	-71?			
123	85 (Fuzzy)								
152	85°								
183	-84-83°								
213	-83°								
243	-78°								
274	-81°								
297	75°								

HOLE NO IR 85-03
 ZIPPY PRINT - BRIDGEPORT, RICHMOND

LOGGED BY Harold Gibson

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
0 to 6.9	Casing					
6.9 to 17.67	Iron Stained Rhyolite Dyke	Colour - brown grey-buff Grain Size - aphanitic Massive rhyolite dyke, core is badly broken & blocky - commonly as 3-4cm size chips - limonitic gouge at 35° to CA at 6.75m and 7.40m - numerous fractures at 90°, <30° + 50° to CA		Unit is pervasively iron stained		Very blocky broken core - 98% recovery from 6.09 to 11.29
17.67 to 18.0	Sheared Rhyolite	Colour - grey-white Grain Size - aphanitic Sheared rhyolite/felsic unit, possible quartz eyes			1% disseminated and patchy pyrite	
18.0 to 18.30	Andesite Dyke	Colour - dark grey Grain Size - aphanitic Massive	contact at 18.0m @ 25° to CA			
18.30 to 25.85	QFP Rhyolite Dyke	Colour - light green-buff - aphanitic groundmass - 10% stubby, <5mm feldspar phenocrysts - trace quartz phenocrysts	contact at 25.28 @ 25° to CA		- nil	thin screens- wedges of grey, pyritic rhyolite from 21.85 to 22.04 and 22.70 to 23.0

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
25.85 to 44.80	Sheared Felsic? Dyke	<p>Colour - dark grey to grey green Grain Size - aphanitic Pyritic felsic, sheared unit - seemingly a massive felsic unit that has been intensely sheared and has a shattered appearance - aphyric, aphanitic (possibly quartz porphyritic?) - intensely fractured - cut by numerous, aphanitic, aphyric, weakly amygdaloidal light green andesite dykes from 26.60 - 27.00 @ 20° 27.20 - 27.30 @ 20° 27.90 - 28.0 28.2 - 28.46 @ 20° 28.75 - 29.0</p> <p>After 29.0m, unit is a darker grey in color, intensely sheared & broken at <20° to CA - looks graphitic. From 32.61 to 32.90 unit has a banded appearance, is brecciated & resembles the base of rhyolitic flows observed at surface - banding @ 70° to CA - unit as a whole is characterized by irregular stringers and pods of grey-white massive quartz which contrasts markedly with the fine-grained grey-buff shattered and foliated matrix - are the quartz pods sheared out quartz-veins? From 44.45 - 44.65 units is a broken quartz vein, sandy grey gouge from 44.65 to 44.80m</p>			<p>Pyrite occurs in fine fractures/veins and as disseminations from 25.85 to 44.80 - averages 1% pyrite with some sections, over 10 - 20 cm containing >5% pyrite - tr chalcopyrite From 37.50 - 44.80 unit is speckled with disseminated, bleby and fine fracture-filling chalcopyrite that typically occurs within, around and adjacent to irregular quartz pods (<1% ccp over interval)</p>	<p>Geochem #3715 38.71 - 44.80 (also for Au,Ag)</p>

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Contacts</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
44.80 to 52.45	Feldspar Porphyritic/ Amygdaloidal Andesite Dyke	Colour - green Feldspar porphyritic, chilled margins, feldspar porphyritic, amygdaloidal interior. <5% feldspar (<4mm) - 8% calcite/quartz amygdule up to 2.5cm	contact at 44.80 @ <5% to CA contact @ 52.45 at 75°			
52.45 to 58.55	Sheared Felsic? Unit	Colour - grey Grain Size - aphanitic Similar to unit from 22.85 to 44.80 - essentially a schist - irregular quartz pods/veins - shattered appearance - aphanitic, aphyric - core is broken to plate-like chips in size, few pieces of core exceed 20cm. strong gouge - shear zone from 58.18 to 58.40 @ <5° to CA - Fault	Dyke Bounded		Disseminated + bleby pyrite throughout but especially associated with irregular quartz-pods <1% pyrite overall trace ccp	Geochem #3716 52.45 to 58.55 (80% recovery in this interval) Chilled margins of Andesite dykes from 52.60 - 52.74 and 52.86 - 53.95 (60% recovery in latter dyke interval)
58.55 to 70.20	Feldspar Porphyritic Andesite Dyke	Colour - light green 3-4%, <4mm subhedral feldspar phenocrysts 2%, <3mm amygdules? aphanitic groundmass - possible xenolith of massive rhyolite (or dyke) from 62.8 - 62.14 - flowbanded margins, contact at 58.55 lost, but flowbanding @ 10% to CA	contact at 70.20 at 20° to CA	Massive, fresh weak epi alt of feldspar	- nil	
70.20 to 72.0	Rhyolite Dyke?	Colour - grey-white Grain Size - aphanitic Massive, uniform aphanitic, aphyric rhyolite - flow?/dyke? - cut by quartz veins at 50-70° to CA	contact at 72.0 at 20° to CA		Trace pyrite at contact	Box #9 spilled in back of truck during transport

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
72.0 to 72.70	Andesite Dyke	Colour - green Grain Size - aphanitic Aphanitic andesitic dyke, aphyric, massive.	sheared contacts at $<20^{\circ}$ to CA	Weak epidote alt.		
72.70 to 115.12	Rhyolite	Colour - grey-white Grain Size - aphanitic Aphyric, massive rhyolite, uniformly textures - broken blocky core - sheared locally at $<20^{\circ}$ to CA - quartz, calcite veins at $40-65^{\circ}$ to CA - has a shattered, intensely fractured appearance - massive white quartz veins up to 5cm wide cut unit at $65^{\circ} - 80^{\circ}$ to CA - weak shear at 10° to CA at 89.90m	sheared, broken contact at 72.70 contact at 115.12 at 25° to CA		Trace pyrite at contacts Minor chalcopyrite, pyrite in irregular dark grey to black fractures throughout unit Pyritic, grey fractures at 25° to CA at 94.4 + 94.6m	Geochem #3717 76.70 - 79.70 Massive andesite dyke from 80.70 - 81.22. Contacts at 45° to CA Insitu brecciated, weakly amygdaloidal feldspar porphyritic andesite dyke from 85.5-86.31m contact at 80° to CA - 60% recovery between 96.62 - 103.02 - blocky highly fractured broken rhyolite
115.12 to 119.45	Felsic "Rhyolite" Tuff Breccia	Colour - grey From 115.12 to 115.74 breccia consists of pale yellow to buff coloured, elongate "felsic" fragments (10cm X 2cm), grey massive felsic fragments in a dark grey matrix >50% fragments From 115.74 to 119.45 breccia consists of massive and flowbanded grey rhyolitic blocks (up to 8cm) pale yellow felsic blocks (<5 cm) green grey blocks (<7 cm) in a fine grained grey felsic breccia matrix - few ($<2\%$) fragments of altered felsic material - probably glass now completely sericite - possible flow breccia?		Few strongly sericitized fragments but generally breccia is not altered.	Fine disseminated pyrite in matrix $<1\%$	Andesite dyke at 25° to CA from 115.74 to 116.17m Dacite dyke at 60° to CA from 117.42 to 118.31m Geochem #3718 115.12 - 119.45

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
119.45 to 128.55	Heterolithic Dacite Breccia	<p>Colour - green Non-sorted, chaotic, massive, framework supported breccia. Fragments range from <0.5cm to 10cm. Fragment types include</p> <ul style="list-style-type: none"> a) massive grey rhyolite, aphyric and aphanitic b) dark green chloritic fragments - altered glass? c) light green massive sericite wispy fragments - altered glass? d) grey-white felsic fragments e) massive andesitic fragments - aphyric f) feldspar phytic and amygdaloidal andesite fragments - green g) bone-white felsic fragments h) <1% fine (<2cm) pyrite rich fragments <p>- fragments are subangular to angular - matrix appears to be a finer breccia of the same but with possible andesitic ash?</p>	<p>contact at 128.55 is gradual & placed where felsic frags are no longer present and fragments are much smaller</p>	<p>Strong sericite and chlorite alteration of few, perhaps originally vitrophyric fragments otherwise unaltered - weak pink coloration (hematite) to core after 127.50m</p>	<p>Trace disseminated pyrite to 124m - pyrite rich fragments (2) at 124.05 - specks of chalcopyrite scattered through and breccia (in more felsic fragments) from 126.90 to 127.60</p>	<p>Thin, 10cm wide andesite dyke at 20° to CA at 125.60m. - Breccia is strongly fractured from 126.40 to 126.90, with several thin (<1cm) gouge zones at 40° to CA Geochem #3719 124.96 - 127.90</p>

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
128.55 to 149.18	Dacite vitric tuff and lapilli tuff	Colour - green Massive, sorted, matrix supported lapilli tuff to tuff - <20% fragments of fine (<1cm) dark green to black, aphyric, aphanitic chloritic dacite vitrophyre? fragments elongate and somewhat parallel to 70° to CA Gouge zone consisting of fine mud/sand from 142.42 to 142.85. Fault at 60-70° to CA? From 143 to 145.79 dacite is disected by irregular quartz vein with thin chloritic envelopes. From 145.79 to 149.18 breccia contains larger fragments of andesite and pink hematitic felsic fragments - lapilli tuff. Fragments up to 10cm in size.		Unit is moderately chloritized throughout - faint but pervasive hematitic alteration that manifests itself as patchy pink coloration is common from 128.55 to 133.20. Strong to moderate chlorite alteration from 133.20 to 136.0 principally as irregular black chlorite-filled fracture networks. Moderate chlorite alteration from 136-149.18	Fine 1% disseminated pyrite and pyrite cubes from 128.55 to 133.20 (with hematite alt), tr. chalcopyrite Trace disseminated pyrite from 133.20 to 143 - <1% ccp in quartz vein at 142.32 - 142.39 adjacent to gouge zone. 1% pyrite in quartz chlorite fractures from 141.73 to 142.42. Minor chalcopyrite (<1%) in irregular quartz/chlorite veins with <1% pyrite from 143 - 145.79.	Geochem #3720 128.55 - 133.20 5 cm under andesite dyke at 25° to CA at 141.70 Amygdaloidal Andesite dyke from 143.65 to 144.90 at 70° to CA Geochem #3721 145.39 - 149.18
149.18 to 154.70	Massive Andesite Dyke or Fine Tuff	Colour - green Fine grained massive andesite - occasional white (quartz) amygdule-like form - locally fine 1-2mm chloritic spots or speckles - possible tuff but very massive		weak-rich chlorite alt.	Trace disseminated & bleby chalcopyrite.	Cut by aphanitic, weakly feldspar porphyritic basalt dyke from 153.30 to 154.70 @ 30° + 80° to CA

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
154.70 to 159.64	Dacite tuff breccia to lapilli tuff Heterolithic	Colour - pink-green Matrix supported, poorly sorted breccia, however larger fragments appear to be concentrated towards lower portion of unit - Breccia consists of a) Andesitic fragments, that are massive, ribbed, and speckled with fine feldspar phenocrysts? b) pink, hematitized fragments c) white felsic fragments d) light green dacitic fragments, few sericitic fragments Matrix is a light green aphanitic dacitic ash that is hematitic after 156.6		Weak chlorite alteration	Trace pyrite	Andesite dyke at 75° to CA from 155m to 155.40m Basalt dyke from 157.30 to 159.9 at 75° to CA
159.64 to 160.83	Andesite Dyke	Colour - green Aphyric, aphanitic massive andesite	35°			
160.83 to 166.84	Andesite Lapilli tuff	Colour - dark green Matrix supported, monolithogic, moderately - well sorted Andesite lapilli tuff. Fragments are chloritized andesite and are subangular to angular in form (up to 5cm) Matrix is aphanitic and lighter green-grey in color.		Unit as a whole is moderately chloritized. Fragments are dotted with fine leucoxene. From 164.60 to 166.21 unit is pinkish in colour - moderate hematite alteration - and fragments are locally altered to a light green - tourquoise color. This alteration is most intense from 165.25 - 166.21 where matrix is strongly hematitized and fragments are light green & chloritized or white and sericitized.	Trace pyrite	Feldspar porphyritic andesite dyke from 161.67 to 162.04 at 80° to CA

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
166.84 to 170.5	Andesitic Tuff	Colour - dark green Massive, homogeneous andesitic tuff - densely packed, no bedding mod. well sorted - composed of fragments <0.5cm in size (<20%) in an aphanitic matrix - few quartz veins at 60° to CA (<1cm wide)	Contact at 166.84 irregular contact at 170.5 marked by irregular quartz vein grada- tional?	pervasive moderate chlorite alteration - leucoxene	Trace pyrite	Geochem #3722 166.85 - 169.85
170.5 to 174.61	Dacitic vitric lapilli tuff	Colour - light green Matrix supported, moderately sorted breccia - monolithologic fragments of aphyric, aphanitic weakly chlorite altered vitrophyre? - fragments range to 2cm in size and are subangular in form - light green-grey aphanitic matrix - weak chloritic shear with quartz veins at 30° to CA at 171.67m - irregular quartz veins at 60°-5° to CA	Contact at 174.61 lost to broken core	Weak chlorite alteration	Trace pyrite, and odd speck of chalcopyrite in quartz veins.	

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
174.61 to 186.98	Andesite - Dacite Tuff to Tuff Breccia	Colour - dark green-grey 174.61 to 178.91 Predominantly a massive, non bedded andesitic tuff, - few andesitic fragments observed 178.91 to 179.15 Dacitic lapilli tuff with 30% chloritic aphanitic aphyric fragments (<1cm in size. Well sorted and matrix supported contact at 179.15 at 75° to CA 179.15 to 181.05 Hematitic andesitic tuff, massive, non bedded (<15% (<0.5cm) mafic fragments locally 181.05 to 181.24 Massive light grey dacitic tuff/ash 181.24 to 181.35 Chloritized quartz vein zone at 80° to CA 181.35 to 186.24 Andesitic tuff-breccia matrix supported, poorly sorted monolithologic breccia Fragments (<1cm to 10cm) of subangular-angular aphyric chloritized fragments (<30%). Light grey (slight pink cast) aphanitic aphyric matrix 186.24 to 186.98 Fine andesitic tuff, possible irregular bed of ash at lower contact at 60° to CA		174.61 to 181.35 Weak chlorite alteration 181.35 - 186.24 Chlorite alteration of fragments with numerous leucoxene crystals.	Trace pyrite in quartz veins and in breccia Chalcopyrite (<1%) with pyrite in quartz veins from 181.24 - 181.35	
186.98 to 188.57	Dacite lapilli tuff	Colour - grey Monolithologic breccia. Fragments up to 6cm in size of dark green chloritized dacite/andesite (subangular) in a siliceous light grey aphanitic aphyric matrix - matrix supported - fragments are larger towards base of unit - graded?	contact at 188.57 marked by shear with chloritic gouge (1cm) at 45° to CA	Chlorite alteration of fragments - minor leucoxene	zip	

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
188.57 to 199.04	Dacite tuff and Lapilli tuff	Colour - grey-light green Massive, homogeneous unit. Fragments difficult to discern but are subangular, slightly darker grey in color than matrix - matrix supported breccia - frags constitute <35° of unit (up to 8cm) and are somewhat larger towards lower contact of unit. However from 195 to 199.04 unit is fine and fragments are difficult to separate from matrix. quartz vein/chlorite shear at 189.5m at 60° to CA and at 191.80m at 70° to CA Quartz veins at 60° and 80° to CA Red Jasper vein 5° to CA at 193.45m		fresh, however slightly darker grey-green color from 190 to 191.70 Hematitic spotting (1-3%) from 194.15 to 195.50	Fine disseminated pyrite throughout unit, but <1% overall local clots, <2-3cm in size of 3-4% pyrite tr. chalcopyrite.	Geochem #3723 194.15 to 197.20
199.04 to 203.65	Rhyolite Dykes	199.04 - 202.13 Quartz feldspar porphyritic buff colored rhyolite dyke - aphanitic groundmass, <10-12% phenocrysts contact at 199.04 @ 60° 202.13 - irregular at <30° 202.13 - 202.23 Grey - Dacitic breccia? 202.23 - 203.65 Flow banded, weakly feldspar porphyritic rhyodacite dyke contact at 202.23 @ 60° contact at 203.65 @ 75°		Zip	Zip	

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
203.65 to 224.60	Dacite Flow & Flow breccia	203.65 - 211.0 Homogeneous, moderately sorted, matrix supported - framework supported monolithologic breccia. Fragments (<1cm to 5cm) of subangular - rounded aphanitic, aphyric dark grey dacite (20-40%) in a light grey, siliceous, aphanitic dacitic matrix - slight pink hue - few quartz veins at 60° to CA - breccia has an insitu appearance locally (204-204.5) 211.0 to 218.0m Massive, aphyric, aphanitic dacite. Light grey-green in colour. Lacks insitu breccia and fragmental nature of unit above into which it appears to grade. Contains <1% lighter green, irregular to rounded Dacitic fragments from 0.5cm to 4cm. - few quartz veins at 50-80° to CA 218 to 224.60 Massive and insitu-brecciated aphyric and aphanitic dacite. Massive dacite of unit above grades into an insitu breccia at 218 with irregular grey aphanitic siliceous veins separating fragments - frameworks supported. In situ brecciated dacite contains <1% light green-grey dacitic fragments (<1.5cm in size) like overlying unit.	contact at 203.65 lost to broken core - looks sheared	203.65 - 211.0 Fresh looking 211.0 - 218.0 Fresh 218.0 - 224.60 Weak chlorite alteration of vitrophyric dacite - probably primary alt i.e. hydration	Trace disseminated pyrite <1% disseminated and cloty pyrite Trace chalcopyrite	Monolithologic, locally insitu breccia nature of breccia resembles a flow top breccia from 203.65 to 211. Andesite dyke from 211.35 to 213.65 at 40° to CA. Upper ctc sheared and quartz veined. Geochem #3724 217.93 - 220.98 Weak shear at 75° to CA at (arc 3mm) 223.80m

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		At 220.65 insitu breccia grades into a crudely banded, mottled, locally insitu brecciated dacite. Mottled texture consists of irregular bands, veins clots of light grey dacite or a darker grey-black more chloritic leucoxene bearing matrix - grey mottles are likely spherulites bands and clusters, darker grey-black matrix is chloritized non-spherulitic dacitic vitrophyric - locally disrupted by light grey siliceous "dacitic" veins. - unit also contains 1% light grey-buff/white siliceous fragments up to 3cm in size - banding is weakly developed at 60° to CA				
224.60 to 251.80	Brecciated Flowbanded & Massive Rhyolite	Colour - light grey Grain Size - aphanitic 224.60 to 224.95 Crudely bedded rhyolite tuff and lapilli tuff. Bedding at 50° to CA with bed thickness of 5-8cm. Fine rhyolitic tuff alternate with matrix supported lapilli tuff containing angular dark grey to white rhyolite fragments - minor ash - looks crudely graded, tops up hole. 224.95 to 251.24 Alternating sections of massive (weakly insitu brecciated), flowbanded and brecciated massive and flow banded rhyolite - aphyric, aphanitic rhyolite - massive rhyolite is light grey in color and locally broken by fine siliceous fractures - flowbanded rhyolite is characterized by alternating darker green grey bands with light grey bands. Flowbands from 2:3mm to 3cm. Banding at 35-65° to CA	contact at 224.60 at 40-50° to CA - sharp contact at 251.80 sharp at 45° to CA	Rhyolite is not visibly altered. Chloritic alteration of vitrophyric flowbands may be primary - local pink hematitic staining.	Trace pyrite	F e l d s p a r porphyritic flow- banded rhyolite dyke at 50° to CA from 235.33- 237.35 Geochem #3725 227.65 - 230.73 Geochem #3726 246 - 249

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		<p>Breccia zones consist of angular fragments of massive & flowbanded rhyolite in a light grey siliceous rhyolitic matrix. Typically matrix supported but locally framework supported. Fragments exceeding 10cm in size.</p> <p>Spectacular spherulitic flowbanding at 10-60° to CA from 244.28 to 247.37. Individual spherulites up to 0.5cm locally.</p> <p>251.24 to 251.80</p> <p>At 251.24 massive rhyolite grades into a matrix supported breccia consisting of angular fragments of massive rhyolite in a light pink siliceous ash matrix that is locally laminated where not disrupted by fragments - cherty ash.</p>				
251.80 to 268.80	Andesitic Lapilli tuff and ash/ Tuff	<p>251.80 to 251.86 Pink-grey felsic ash bed at 40° to CA</p> <p>251.86 to 252.20 Grey heterolithic lapilli tuff fragments (30%) of</p> <ul style="list-style-type: none"> - grey dacite, finely amygdaloidal - grey green dacite, fine amygdules - mg grey/green dacite - white felsic aphyric frags - black-dark grey angular + wispy fragments <p>- in a siliceous grey-pink matrix - frags range up to 5cm</p> <p>252.20 - 254.0 Green andesitic breccia (lapilli tuff) composed of predominately aphanitic, aphyric, green angular andesitic fragments with <5% light green-grey felsic fragments Matrix is a fine, pink-grey ash. Pink-grey ash beds at</p> <p>252.30 252.32 and at 253.50-253.54 at 30° to CA</p>		Weak chlorite alteration		Geochem #3727 252.0 - 255

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		254.0 to 257.48 Massive andesite, vague andesitic fragments - insitu brecciation locally		254.0 to 257.48 fine insitu breccia associated with weak-moderate chlorite alteration		Weak chloritic shear at 10° at 254.28m
		257.48 to 258.60 Dacitic/andesitic vitric lapilli tuff, moderate sorting, matrix supported - fragments of aphyric/aphanitic chloritic green dacite (<1cm) in a lighter green matrix		257.48 to 258.60 weak-moderate chlorite alteration		
		258.60 to 265.80 Massive andesite tuff - lapilli tuff with faint, fuzzy andesitic fragments.		258.60 to 265.80 Weak-moderate chlorite alteration. Strong pink hematitic alteration from 263.50 to 264.70		
268.80 to 281.32	Heterolithic Lapilli Tuff	Colour - green Moderate to poorly sorted framework supported lithic lapilli tuff. Fragments include a) grey-pink (hematitic) felsic fragments up to 3cm - angular - subangular - <8% b) Aphanitic, aphyric green, massive andesite fragments, angular - up to 5cm - 20-25% - matrix is a lighter green grey in color, aphanitic and aphyric - breccia does not appear to be graded or bedded however massive andesite from 267.21 - 267.3 at 70° 270.90 - 271.73 at 70° 276.04 - 276.31 at 75° 277.20 - 277.38 at 70° may be dykes or massive tuff beds - likely dykes.	contact at 287.32 at 50-45° to CA and sharp	Weak chlorite alteration	Trace pyrite	Geochem #3728 273.40 - 275.84

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
281.32 to 297.79 E.O.H.	Dacite Flow Breccia?	<p>Colour - dark grey-green Grain Size - aphanitic 281.32 - 281.63 Massive chloritized dacite 281.63 - 284.95 Massive, aphyric aphanitic dacite. Vague fragmental textured where large blocks are separated by grey, hematitic siliceous veins. 284.95 - 297.79 Breccia textured dacite grades into more massive unit above. Breccia consists of vague, faint dacite fragments with lighter green cores and darker rims (common) in a lighter grey to pink hematitic matrix. Frags are subrounded to angular in form and have blocky to irregular shapes and range in size to 10(+)cm. Some massive sections (up to .5m) may be large blocks? After 294.40 fragments are lighter in color and stand out from matrix. After 288.5 unit contains fine 1mm or less size crystals - leucoxene? (<3%)</p>		Fresh looking, red hematitic veins in matrix from 286.80 - 290.2	Trace pyrite in fracture, odd clot of pyrite up to 1cm in size (at 296.78)	Geochem #3730 294.74 - 297.79

LITHOGEOCHEMISTRY

MAJOR OXIDES

TRACE ELEMENTS

SAMPLE NUMBER	FROM (m)	TO (m)	MAJOR OXIDES										TRACE ELEMENTS					Rock Type	Zr			
			SiO ₂	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	FeO	MnO	TiO ₂	Ba	ppm Cu	ppm Zn	% Pb	ppm Ag	ppb Au					
3715	38.71	44.80	60.89	14.69	2.45	4.00	1.57	2.70	7.26	0.22	1.11	.037	3060	248	.023				.005			
3716	52.45	58.55	61.35	15.56	2.59	3.17	2.97	2.47	6.50	0.21	0.71	.038	100	120	.016				.009			
3717	76.70	79.70	72.10	11.35	1.87	0.49	3.64	3.01	0.88	0.06	0.06	.241	12	16	.005				.005			
3718	115.12	119.45	65.18	15.38	1.54	1.51	2.04	4.79	2.28	0.11	0.28	.091	30	66	.011				.005			
3719	124.96	127.90	64.45	17.71	0.55	4.46	1.44	3.63	5.95	0.21	0.71	.053	106	234	.014				.008			
3720	128.55	133.20	59.66	17.59	0.41	5.12	0.99	3.97	9.17	0.24	0.81	.045	88	236	.029				.007			
3721	145.39	149.18	55.52	20.15	0.63	7.03	1.21	3.75	9.42	0.32	0.91	.043	36	228	.020				.009			
3722	166.85	169.85	58.60	18.73	0.49	6.33	2.94	2.40	8.00	0.37	0.86	.019	20	200	.024				.009			
3723	194.15	197.20	62.61	13.92	0.71	2.65	3.12	2.36	3.24	0.19	0.48	.023	12	102	.008				.007			
3724	217.93	220.98	66.46	15.77	0.68	3.36	2.51	3.10	3.23	0.17	0.55	.050	24	104	.012				.008			

Roy Dacite/Andesite

Hole No. IR 85-03

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Page No. 17

LITHOGEOCHEMISTRY

MAJOR OXIDES

TRACE ELEMENTS

SAMPLE NUMBER	FROM (m)	TO (m)	MAJOR OXIDES										TRACE ELEMENTS					Rock Type	Zr				
			SiO ₂	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	FeO	MnO	TiO ₂	Ba	ppm Cu	ppm Zn	ppm Pb	ppm Ag	ppb Au						
3725	227.68	230.75	70.40	14.75	0.14	3.66	1.06	3.52	2.31	0.08	0.21	.037	8	49	.009				.011				
3726	246	249	68.86	13.45	0.08	3.41	0.52	3.26	1.93	0.06	0.19	0.030	8	44	.014				.009				
3727	252	255	58.22	19.30	0.41	7.02	1.97	2.78	8.93	0.21	1.11	0.024	8	108	.028				.007				
3728	273.40	275.84	62.21	18.19	0.44	3.84	5.06	1.57	7.00	0.23	0.91	0.018	20	96	.018				.008				
3730	294.74	297.79	65.31	17.02	0.48	3.42	3.89	2.72	4.26	0.14	0.64	0.033	12	102	.013				.009				

Roy Rhyolite

Lower Dacites/

Andesites

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CORPORATION FALCONBRIDGE COPPER

DRILL HOLE RECORD

X METRIC UNITS
IMPERIAL UNITS

HOLE NUMBER IR 85-04	GRID	FIELD COORDS	LAT.	DEP.	ELEV 678m	COLLAR BRNG. 237	COLLAR DIP -75	HOLE SIZE BQ	FINAL DEPTH 331.62m	
PROJECT 313	CLAIM #	SURVEY COORDS				DATE STARTED: Oct 29/85 DATE COMPLETED: Nov 11/85	CONTRACTOR: M & B CORE STORAGE: CASING:			
PURPOSE To test Upper Rhyolite contact with Roy Dacite and top of Roy Rhyolite north of the Roy Prospect								RQD LOG COLLAR SURVEY	PULSE EM SURVEY MULTISHOT SURVEY	
ACID TESTS				TROPARI TESTS			MULTISHOT DATA			
DEPTH (m)	CORRECTED ANGLE	DEPTH ()	CORRECTED ANGLE	DEPTH (m)	AZIMUTH	DIP	DEPTH ()	AZIMUTH	DIP	
30m	75°			63	237°	-73°				
91m	73-74°			246	244°	68°				
122m	73-74°									
152m	74-73° double line									
213m	72-73°									
243m	69°									
274m	67°									
305m	Failure									
334m	66°									

HOLE NO IR 85-04
ZIPPY PRINT -- BRIDGEPORT, RICHMOND

LOGGED BY Harold Gibson

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
0 to 9.45	Casing	22% recovery from 8.53 - 9.45m - ground core - rhyolite and andesite				Boulders?
9.45 to 119.52	Flowbanded and Massive Rhyolite	Colour - grey to orange-grey 69% recovery from 9.45 to 12.19 - very blocky ground. Rhyolite is grey in colour aphanitic and aphyric commonly with fine mm scale flowbanding a result of alternating dark grey, grey and pale grey laminae at 65° to 20° to CA - locally insitu brecciated with fragment intact or rotated with respect to each other - fine siliceous matrix - very blocky ground, poor recovery. 90% recovery from 44.65-46.33 Core looks more competent after 49m and is typically a grey colour with light grey flowbands and alteration around fine fractures.		Typically rhyolite "weathers" a rusty orange brown color - hematitic/limonitic weathering	Trace pyrite	Andesite dyke from 12.10 to 23.24 ctc at 23.27 at 20° to CA 98% recovery from 17.37-21.94 Andesite dyke from 42.70-43.20 Geochem #3729 33.22 - 39.62 Massive, weakly feldspar porphyritic rhyodacite dyke from 59.38 to 61.27 at 40° to CA

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		<p>- numerous irregular hair-like fractures at irregular angles to C.A.</p> <p>Rhyolite is distinctly brecciated from 93.52 to 95.86 - monolithologic flowbreccia with <1% white exotic looking lapilli-sized fragments. Distinct dark grey, almost black flowbands from 97.0 - 104m that alternate with predominately light grey, white and green-grey flow laminae typically @ 60° to CA</p> <p>Rhyolite is badly broken i.e. blocky, iron-stained and brecciated from 108-112.01. The breccia consists of rhyolite fragments up to 8mm in size and may be a tectonic breccia indicating a fault at 20° to CA</p>			<p>Fracture controlled molybdenite? from 80.4 to 96.28m, Mineralization within fine 1-2mm hair-like fractures at irregular angles to core axis (<20° to 70°). Rhyolite does not appear to be altered and is light grey - white in color. Dark grey mineral is molybdenite or graphite and is associated with fine pyrite and trace chalcopyrite. Best interval from 83.62 to 84.87 will contain 1% or slightly less molybdenite? Possible fine hair-like fractures with fine moly? in breccia from 111.8 - 112. (Assays taken in this interval contain .001 Mo, dark fine mineral is likely graphite)</p>	<p>Geochem #3731 67.0 - 70.0 80% recovery from 69.19 - 73.15 Assays samples #3811 80.4 to 81.38 #3812 82.15 to 82.53 #3813 83.62 to 84.87 #3814 88.43 to 89.91 F e l d s p a r P o r p h y r i t i c rhyodacite dyke with flowbanded margins from 85.30 - 88.43 at 40° to CA</p>

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		<p>Few, thin quartz veins locally as a matrix to the breccia at generally 20-30° to CA</p> <p>From 117.95 to 119.52</p> <p>Rhyolite breccia, flowbreccia consists of predominately grey-green massive rhyolite and rhyolite fragments of the same with <3% exotic fragments of grey dacite, andesite and grey sericitic pyrite (5-6%) felsic fragment up to +10 cm in size</p> <ul style="list-style-type: none"> - breccia matrix where present is a grey colour and aphanitic - probable flow bottom breccia - grey sericitic pyritic fragment in base of breccia is similar to grey sericitic pyritic breccia fragments observed at base of Upper Rhyolite at surface directly below drill - may have been caught up and carried along in basal flow breccia? 	<p>contact at 119.52 @ 60° to CA? but v e r y irregular</p>		<p>Minor disseminated pyrite in breccia from 117.95 - 119.52m</p>	<p>F e l d s p a r P o r p h y r i t i c Dacite dyke from 89.91-90.30 at 50° 90.81-93.52 at 50° Assay #3815 90.30 - 90.81 #3816 95.50 - 96.26 Geochem #3732 96.6 - 100.8 Possible dacite dyke indicated in broken core @ 104.60m.</p>

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
119.52 to 120.20	Heterolithic Lapilli-Tuff	Poorly sorted, non bedded chaotic, framework supported breccia. Frag. range from <0.5cm to 7cm. Fragments of a) subangular massive aphyric, aphanitic light green rhyodacite/rhyolite (similar to overlying rhyolite) - pred. fragment type b) subangular dacitic vitric lapilli tuff & tuff (similar to Roy dacite package) c) grey felsic fragments, subangular d) pink hematitic fragments e) sericite altered dacitic fragments f) pyritic fragments (<1%) matrix is a fine-grained dacitic(?) ash?	contact at 120.2 lost to broken core	Weak to total sericite alteration of some dacitic fragments.	Trace disseminated and bleby pyrite - <1% pyritic fragments	Still may be base of flow but contains more heterolithic fragments
120.20 to 170.94	Massive Rhyolite/ Rhyodacite	Colour - grey-green Grain Size - aphanitic Massive, uniform, aphanitic, aphyric rhyolite - few quartz-veins, chlorite shear (1cm wide) at 80° to CA at 120.95m.		Fresh looking	From 126.0 - 132.32m Rhyolite cut by fine, <2mm wide fractures at 5° + 60° to CA that are filled with a dark grey sooty fine grained mineral that also mantles the fractures - possibly fine moly/ graphite	

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		<p>Rhyolite badly broken and blocky from 127.60 - 128.81 (80% recovery) and at 129.63 - 129.86 and from 135.0 - 135.40</p> <ul style="list-style-type: none"> - thin quartz veins at 50° - 90° to CA - irregular, fine (<1mm) fractures with grey envelopes (<1m) dissect unit - possible fine flowbanding between 156 - 158.50 - quartz veins up to 10cm wide from 156.25 - 156.67 at 85° to CA <p>After 165.50 rhyolite has a mottled appearance with light grey areas in a darker grey-green areas and from 169 - 170.94 is distinctly flowbanded and weakly flow brecciated. Spectacular flowbanding from 170.20 to 170.94 characterized by light coloured coarsely spherulitic bands alternating with green, sericitized vitrophyric bands</p> <ul style="list-style-type: none"> - massive white quartz vein at 80° to CA from 170.75 - 170.92m. 	<p>contact at 170.94 at 40-50° to CA irregular</p>		<p>Trace pyrite with this sooty grey mineralization Geochem Sample #3733 (128.81 - 132.28) will be assayed for Mo.</p>	<p>F e l d s p a r p o r p h y r i t i c, a m y g d a l o i d a l d a c i t e d y k e s f r o m 143.04 - 144.35 @ 65° 148.65 - 150.87m @ 75° to CA Geochem #3737 166.42 - 169.77</p>

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
170.94 to 172.54	Rhyolite Breccia	<p>Framework supported, poorly sorted breccia</p> <ul style="list-style-type: none"> - massive/not bedded consists of a) light grey-white felsic fragments (contains fine green crystals?) b) light grey-green aphanitic aphyric rhyolite (identical to rhyolite flow above) c) green; massive sericite-altered vitrophyric fragments d) green dacitic fragments which appear to contain vitric fragments (similar to Roy dacite) e) amygdaloidal (quartz) rhyolite fragments f) fb-rhyolite fragments <ul style="list-style-type: none"> - matrix is aphanitic, light green and siliceous - possible flow bottom breccia - flow ctc breccia 		- nil	Trace pyrite in matrix and in fragments.	Geochem #3738 170.94 - 172.54

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
172.54 to 211.36	Rhyolite	<p>Colour - white to light green grey Grain Size - aphanitic 172.54 to 172.70 Massive, flowbanded rhyolite, individual bands at 45° to CA and vary from light to dark green-grey - flowbanded rhyolite dissected by numerous irregular hair-like fractures or perlitic cracks - perlitic, flowbanded vitrophyric contact 172.54 - 175 Rhyolite is a light cream grey in colour in this interval and badly broken/fractured - fine rhyolite breccia from 172.54 - 172.92 - massive fractured rhyolite to 175, where it grades into massive aphanitic, aphyric light green-grey rhyolite 175 - 189.0 Massive, aphanitic, homogeneous aphyric rhyolite - few quartz veins at 70-90° to CA Zone of shattered and quartz veined rhyolite from 188.60 - 191.12, fault at 10-15° to CA</p>	<p>at 172.54 @ 45-50° CA - sharp but irregular</p>	<p>- not altered except from 172.54 - 175 in fault/ shear zone</p>		<p>P o s s i b l e fault/shear from 172.54 - 175m Geochem #3739 176 - 179 Geochem #3743 204 - 207</p>

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		<p>199.0 - 209</p> <p>Aphanitic, aphyric rhyolite as above except unit contains <1% xenoliths of light coloured felsic rock, and speckled felsic rock (fine 1mm dark spots) - typically subangular and from 1cm to 2.5cm in size</p> <p>- rhyolite displays a faint flowbanding</p> <p>- sheared broken and shattered rhyolite from 203.15 to 203.90m, possible shear at shallow angle to CA (<30°).</p> <p>From 207.50 to 209.0 rhyolite has a contorted, flowbanded appearance and grades into a breccia at 209.0</p> <p>209 - 211.36</p> <p>Framework supported chaotic breccia consisting of irregular to blocky subangular to angular fragments of:</p> <ol style="list-style-type: none"> aphyric, aphanitic light grey + grey-green rhyolite light green, white speckled aphanitic aphyric dacite similar to underlying unit (more prominent after 210m). light grey felsic fragments red hematitic fragments light green to grey flowbanded sericitic fragments of irregular altered vitrophyre - rhyolite hyaloclastite <p>Matrix is a f.gr. rhyolite/dacite</p> <p>- frags range to 6cm</p> <p>- after 210m speckled green daitic fragments predominante, contact with underlying dacite is marked by quartz veins and shear (over 8cm) at 30° to CA</p>		<p>Fresh looking</p> <p>- weak sericitic alteration of vitrophyric fragments from 209 - 211.36m</p>	<p>trace pyrite</p>	<p>F e l d s p a r p o r p h y r i t i c d a c i t e d y k e f r o m 2 0 2 . 8 2 t o 2 0 3 . 1 5 a t 5 0 - 5 5 ° t o C A</p>

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
211.36 to 240.96	Massive Dacite Tuff or Flow?	<p>211.36 - 237.0 Massive, homogeneous aphyric, aphanitic dacite. Fine (<1mm) light coloured crystals dot surface of core (3%). Fragments identical to massive dacite occur in breccia above.</p> <ul style="list-style-type: none"> - non bedded, uniform and characteristically non-discript - quartz veins at 80° but predominately at 30° to CA - occasional aphyric aphanitic lighter green weakly sericitized "fragments" <1cm in size - subangular and possibly vitric clasts - unit is much more blocky than overlying rhyolite - core broken into 30cm to 2cm section along quartz veins at 75/80° and <30° to CA - aphyric fragments more common after 228m but still <1%. Light coloured aphyric green grey lithic fragments also recognized after 228m. - badly ground core from 229 - 229.5 - shear at 40° to CA <p><u>237 to 239.75</u> Interval is similar to above, and contains aphyric, aphanitic lithic fragments (<1%) however the matrix/groundmass has a clastic appearance. Fine 2-3m quartz eyes - crystals - appear at 238.30m and unit has a weakly banded appearance.</p> <ul style="list-style-type: none"> - possible flow or welded vitric tuff - dacite 		- looks reasonably fresh, fine crystals may be leucoxene indicating perhaps a weak chlorite alteration.	"ee-gads nothing"	Geochem #3744 212.44 - 215.49

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
		<p><u>239.75 to 240.96</u> - contact at 239.75 is sharp at 50° to CA - interval consists of irregular light green mottled areas containing quartz crystals surrounded by a dark green chloritic matrix. Mottled areas may be spherulites and dark green chloritic areas altered vitrophyric matrix - base of flow or densely welded zone/base of tuff unit - unit is weakly brecciated with blocks separated by a massive grey, finely fragmental siliceous matrix</p>				
240.96 to 249.77	Heterolithic Tuff Breccia	<p>Colour - grey-green Poorly sorted, matrix to framework supported, non-bedded breccia. Fragments range from 15cm to 20cm and include:</p> <ul style="list-style-type: none"> a) mottled textured, aphyric, aphanitic dark green frags speckled with leucoxene - subangular b) light green to grey green aphanitic, to weakly amygdaloidal & locally banded dacite - subangular to angular c) Pink, hematized (variably) felsic fragments - subangular d) angular to subangular grey green aphanitic dacitic fragments e) strongly amygdaloidal (Spherulitic coronas) vitrophyric fragments f) cherty felsic fragments <p>- fine aphanitic grey to pink siliceous matrix - weak shear at 30° to CA at 245.3</p>	contact at 240.96 at 50° to CA			Geochem #3745 243.68 - 245.97

<u>From</u> <u>To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to</u> <u>Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
249.77 to 252.72	Dacite Lapilli tuff	Colour - grey Matrix supported, poorly sorted breccia, fragments of dark-light green dacite and black chloritic rock in a siliceous light green matrix - hematitic quartz vein zone from 252.13 - 252.50		Chloritic alt. of some fragments		
252.72 to 254.0	Andesitic Ash, Tuff and Lapillistone	Colour - green <u>252.92 - 252.79</u> Thin bedded green andesitic tuff and pinkish-grey tuff/ash beds @ 80° to CA <u>252.79 - 252.86</u> Andesitic ash/tuff bed, massive, 80° to CA <u>252.86 - 254.0</u> Andesitic lapillistone tuff beds. Beds are comprised of predom- inately green, mafic spotted (fine amygdules?) andesite fragments (<5cm), few light green dacitic fragments and trace hematitic fragments in a light pink/grey matrix - fragments subangular - beds separated by thin 2cm - 4cm pink-grey ash beds at 253.04 and 253.10 at 80° to CA - tops up hole - lapillistone tuff from 253.73 - 254.0 is composed of dark green andesitic fragments and may be chloritized.	contact at 254.0 sharp + weak sheared @ 20° to CA	Unaltered, weak hematite staining to ash matrix - moderately chloritized from 253.70 - 254.0		

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
254.0 to 264.15	Andesitic Dacitic Tuff	Colour - green 254.0 - 256.5 Fine-grained, massive andesitic tuff, fine (<0.5cm aphyric, aphanitic mafic frags - angular - <5% fragments - quartz veins @ 5 and 30° to CA from 254.40 - 254.70 256.50 - 264.15 Dacitic vitric tuff, similar to above but with distinct dark green, aphanitic and aphyric lapilli-size fragments in a green matrix Quartz veins + quartz vein breccia from 263.45 - 264.15		Moderate, pervasive chlorite alt-unit may have originally been dacitic - cut by jasper veins from 260.90 - 262	Minor disseminated pyrite but with good chalcopyrite stringers up to 0.5cm wide from 261.04 - 261.75 - 2% ccp over interval	Assay #3818 261.04 - 263.75 ccp stringers + jasper Geochem #3746 258.16 - 260.60
264.15 to 273.55	Hematized Andesite/ Dacite Lapilli Tuff	Colour - pinkish-green-dark green Fine andesitic tuff, faint dark green andesite fragments in a pinkish grey hematitic more siliceous looking matrix - possible massive, weakly hematitic tuff bed from 272.52 to 273.20 at 40° to CA		Pervasive, pink coloration to unit - hematite staining Weakly chloritic	Trace pyrite	F e l d s p a r p o r p h y r i t i c Andesite dykes from 266.80 - 267 @ 10+50° to CA and from 270.82- 272.12 at 40° to CA

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
273.55 to 281.88	Andesitic Tuff Breccia	Colour - green Poorly sorted, matrix supported, non bedded, massive breccia Fragments range from <0.5cm to 20cm in size and subangular - angular in form. Fragment types: a) green aphanitic andesite with fine dark green spots (amygdules and crystals) b) dark green aphanitic fragments - chloritized c) grey to pink aphyric, aphanitic dacitic fragments d) flowbanded green dacitic fragments e) fragments of green andesitic/dacitic tuff, and fine lapilli tuff? Matrix is light grey and siliceous - aphanitic/aphyric	273.55 irregular contact at 60-75° to CA	Strong chlorite alteration of some andesite fragments - faint pink hematitic coloration to matrix locally	Fine disseminated pyrite in green andesite fragments (up to 1% pyrite)	
281.85 to 287.53	Andesitic and Dacitic Tuff	Colour - green to dark grey <u>281.85 - 281.92</u> Fne dacitic tuff bed, with fine pink-grey ash top <u>tops up hole</u> - fine mafic/dark green fragments < 3mm in size <u>281.92 - 285.2</u> Fine andesitic tuff, green in colour and dotted with 5-15% dark green fragments up to 4mm in size - in situ brecciated & veined by light grey to pink grey fine cherty quartz from 284.14 - 285.2 <u>285.2 - 287.53</u> Grey-pink grey dacitic tuff, massive and homogenous. Fine 2-3mm dark green fragments from 286.5 - 287.53		Weak hematitic staining	Trace disseminated and fracture pyrite.	Geochem #3747 276.45 - 297.50

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
287.53 to 299.92	Rhyolite Flow	Colour - light green-grey 287.53 - 288.40 Flow contact breccia consisting of angular - subangular fragments of green dacitic tuff, grey felsic flow, dark green chloritized rhyolite? in a light green, flowbanded rhyolite matrix 288.40 - 299.92 Flowbanded and massive rhyolite - aphyric and aphanitic with <1% xenoliths - flowbanding at 50-60° to CA diminishes after 293.50m weak insitu breccia and dark grey colour from 298.70 to 299.46 Strong shear from 299.46 - 299.92 with 43% recovery - shear/fault at 35° to CA - chloritic gouge	contact @ 287.53 @ 40° to CA	Fresh looking.	Trace pyrite and chalcopyrite in rhyolite from 288.40 - 288.90m <1%	Geochem #3748 290.78 - 293.82
299.92 to 311.38	Plexus of Andesite Dykes	Colour - dark green Aphanitic, aphyric (weakly feldspar porphyritic) mafic and calcite amygdaloidal andesite dykes from 299.92 to 302 amygdaloidal andesite dyke 302.0 - 302.21 Andesite lapilli, few felsic blocks 302.21 - 304.40 Amygdaloidal andesite dyke 304.40 - 305.0 Massive rhyolite, sheared ctc at 305.0 @ 20° to CA 305.0 to 307.15 Amygdaloidal andesite dyke 307.15 - 307.48 Andesitic tuff 307.48 - 310.15 Amygdaloidal andesite dyke 310.15 - 310.35 Andesitic lapilli tuff 310.35 - 311.38 Mafic amygdaloidal andesite dyke		weak chloritic alteration of andesitic screens		

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
311.38 to 331.62 E.O.H.	Andesite/ Dacite Breccia - flowbreccia/ lapilli tuff	<p>Colour - green Grain Size - aphanitic Monolithologic, moderately well sorted, framework supported breccia. Fragments of green aphanitic - aphyric andesite up to 5cm - breccia locally has an insitu brecciated/shattered appearance and locally grades into massive non-brecciated andesite/dacite - possible flow breccia - over 10cm at 318.50m, Breccia consists of white felsic fragments, grey-green dacite and green andesitic fragments - framework supported Feldspar porphyritic andesite from 319.30 to 320.7, may be dyke or massive flow? @ 322.4 breccia grades into a more massive, aphanitic, aphyric and locally insitu brecciated massive andesite/dacite flow - occasional feldspar phenocrysts Unit from 330.85 to 331.62 is a massive feldspar porphyritic dacite/andesite containing up to 8% feldspar phenocrysts (<8mm). Feldspar porphyritic fragments in overlying flowbreccia unit suggest this lava unit is a massive flow</p>		Local epidote patches otherwise not altered.	Minor disseminated and fracture pyrite in epidote patches	<p>F e l d s p a r p o r p h y r i t i c d a c i t e d y k e s f r o m 322.40 to 323.09 @ 40° and from 323.55 - 323.90 at 40° Amygdaloidal, flow banded andesite dyke from 328.30 to 328.90m at 25° to CA Geochem #3749 323.09 - 326.74</p>

LITHOGEOCHEMISTRY

MAJOR OXIDES

TRACE ELEMENTS

SAMPLE NUMBER	FROM (m)	TO (m)	MAJOR OXIDES										TRACE ELEMENTS									
			SiO ₂	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	FeO	MnO	TiO ₂	Ba	ppm Cu	ppm Zn	% Pb	ppm Ag	ppb Au	Zr				
3729	33.22	39.62	68.86	13.19	0.22	0.33	4.24	5.39	0.79	0.06	0.08	.096	8	22	.005			.005				
3731	67	70	67.22	11.68	0.28	0.18	1.95	6.73	0.89	0.08	0.06	.144	16	33	.007			.005				
3732	96.6	100.8	74.73	13.08	0.69	0.39	3.06	5.28	1.14	0.08	0.07	.101	22	41	.008			.005				
3737	166.42	169.77	75.27	12.48	0.55	0.66	0.99	7.94	0.79	0.07	0.07	.124	18	29	.013			.005				
3733	128.81	132.28	69.36	11.17	0.51	1.36	0.47	5.58	0.93	0.09	0.06	.108	33	40	.005			.005				
3738	170.94	172.54	68.70	13.32	0.45	1.77	1.69	5.03	1.83	0.11	0.17	.080	28	142	.008			.005				
3739	176.0	179.0	64.11	10.68	0.21	1.23	0.09	6.84	0.72	0.07	0.06	.129	13	47	.005			.005				
3743	204	207	75.70	12.15	0.42	1.63	0.43	6.62	1.22	0.10	0.12	.263	38	63	.005			.005				
3744	212.44	215.49	65.76	16.17	0.61	3.98	4.26	1.74	4.39	0.26	0.53	.027	14	100	.010			.012				
3745	243.68	245.97	60.25	18.03	0.20	4.53	2.92	2.66	5.72	0.16	0.69	.028	10	105	.010			.012				
3746	258.16	260.60	58.01	18.23	0.60	6.45	3.53	1.63	8.40	0.31	1.00	.018	72	194	.018			.007				
3747	276.45	279.50	56.03	19.07	0.44	5.50	1.03	3.67	7.52	0.21	0.88	.039	11	120	.012			.010				
3748	290.78	293.82	78.97	12.20	0.35	1.92	1.10	4.26	0.81	0.09	0.07	.143	18	61	.013			.005				
3749	323.09	326.74	65.91	16.44	0.92	3.44	4.75	1.55	4.28	0.23	0.40	.023	10	101	.012			.008				

Hole No. IR 85-04

Entered by _____

Logged by Harold Gibson

Page No. 17

ASSAY SHEET

Sample Number	From (m)	To (m)	Estimate		Length (m)	% Cu	% Zn	% Pb	gm. T Ag	gm. T Au	Mo	oz Ag	oz Au	% MgO	% Fe	PPM Cu	PPM Zn	PPM Pb	PPM Ag	PPB Au					
			Cu	Zn																					
3811	80.4	81.38			0.98	.014	.01		1.6	.06	.001	.05	.002												
3812	82.15	82.53			0.38	.011	.01		0.2	.04	.001	.01	.001												
3813	83.62	84.87			1.25	.010	.01		0.2	.04	.001	.01	.001												
3814	88.43	89.91			1.48	.009	.01		1.8	.02	.001	.05	.001												
3815	90.30	90.81			0.51	.004	.01		2.1	.02	.001	.06	.001												
3816	95.50	96.26			0.76	.010	.02		0.2	.02	.001	.01	.001												
3818	261.04	261.75			0.71	.293	.02		2.4	.04		.07	.001												

Hole Lost

CORPORATION FALCONBRIDGE COPPER

METRIC UNITS
 IMPERIAL UNITS

DRILL HOLE RECORD

HOLE NUMBER IR 85-05	GRID	FIELD COORDS	LAT.	DEP.	ELEV. 780m	COLLAR BRNG. 237	COLLAR DIP 75	HOLE SIZE BQ	FINAL DEPTH 133.19m	
PROJECT 313	CLAIM #	SURVEY COORDS.				DATE STARTED: Nov 3/85 DATE COMPLETED: Nov 10/85	CONTRACTOR: M & B CORE STORAGE: CASING:			
PURPOSE To test upper & lower contacts of Upper Rhyolite and Underlying Roy Dacites below an area of surface Na ₂ O depletion								RQD LOG	PULSE EM SURVEY	
								COLLAR SURVEY	MULTISHOT SURVEY	
ACID TESTS				TROPARI TESTS			MULTISHOT DATA			
DEPTH ()	CORRECTED ANGLE	DEPTH ()	CORRECTED ANGLE	DEPTH ()	AZIMUTH	DIP	DEPTH ()	AZIMUTH	DIP	
30m	75°			63m	233°	74°				
16m	75°									
92m	75°									
122m	75°									

HOLE NO. IR 85-05
ZIPPY PRINT * -- BRIDGEPORT, RICHMOND

LOGGED BY Harold Gibson

<u>From To</u>	<u>Rock Type</u>	<u>Texture and Structure</u>	<u>Angle to Core Axis</u>	<u>Alteration</u>	<u>Sulphides</u>	<u>Remarks</u>
0 to 28.3	Casing					
28.3 to 30.48	Rhyodacite	Colour - grey Grain Size - aphanitic Massive grey rhyodacite dyke/flow				10% recovery
30.48 to 40.35	Feldspar Porphyritic Andesite Dyke	Colour - rusty to green in colour Grain Size - aphanitic matrix 6-8%, 3-4mm white feldspar phenocrysts - aphanitic, aphyric green groundmass (possible quartz-feldspar porphyritic dyke from 34.10 to 34.35)	contact at 40.35 chilled and sharp @ 35° to CA	distinctly oxidized from 30.48 to 36.27		6% recovery from 30.48 - 33.53 Muddy gouge, rusty, at 33.54 80% recovery from 36.27-38.10
40.35 to 46.30	Felsic Rhyodacitic Unit	Colour - grey-white Grain Size - aphanitic Massive, aphyric, aphanitic felsic unit, possible dyke - has a weak green mottled appearance - irregular quartz veins and green "chloritic" fractures @ 40*o to CA			1% fine disseminated and fracture controlled sugary pyrite - trace chalcopyrite - oxidized, red fractures	Geochem #3734 41.15 - 46.30
46.30 to 47.40	Grey Felsic Unit	Colour - light grey Grain Size - aphanitic Massive, aphyric, aphanitic unit, - homogeneous	sharp contact at 46.30		Soaked with 2-3% disseminated pyrite - trace chalcopyrite	Geochem #3735 46.30 - 47.40

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47.40 to 48.20	Light grey Rhyolite -Dyke?	Colour - light grey Grain Size - aphanitic Massive, homogeneous, aphyric felsic unit	not present		- trace disseminated pyrite - irregular fractures locally filled with black-reddish black mineral-hematite? and quartz - sphalerite??	
48.20 to 49.07	Andesitic Dyke	Colour - grey-green Aphanitic, aphyric and massive.				
49.07 to 54.73	Felsic Rhyodacitic Dyke?	Colour - grey Aphanitic, aphyric unit - mottled shades of light grey and green - unit may be more siliceous (light color) after 53.50m		Weakly chloritic?	<1% disseminated and fracture controlled pyrite - 4mm wide pyritic stringers from 54.63 - 54.73 at 5° to CA, trace ccp.	Similar to unit from 40.35 - 46.30
54.73 to 68.5m	Altered Diorite?	Colour - dark grey Mottled textured, speckled unit with irregular clots (<math><0.5\text{cm}</math>) of feldspar in a more chloritic matrix - remnant igneous texture suggests its an altered diorite - massive unit Unit badly broken and blocky for 65.90 to 68.0m with some siliceous white sections after 67.0m		- chloritic alteration with some silicification - weak epidote alteration of feldspar - weak white.sericite?-qtz alteration envelope along some pyrite veins	From 56.50 to 60m unit is dissected by massive pyrite veins from several mm to 1cm wide at 5° - 20°, 85° and 60° to CA Best section from 58.25 to 60m contains up to 10% pyrite, with some stringers up to 35cm in length/1cm wide - trace chalcopyrite - <math><1\%</math> disseminated pyrite throughout - occasional pyrite stringer after 60m, <math><1\%</math> disseminated pyrite	Assay #3817 58.35 - 60m Geochem #3736 54.73 - 57.91

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68.5 to 71.0m	Andesite Dyke	Colour - dark green-grey Grain Size - aphanitic Massive homogenous aphyric andesite				
71.0 to 72.0	Andesitic lapilli-tuff (graphitic?)	Colour - dark green-grey Dark green, aphyric, aphanitic chloritic andesite fragment (>1cm to 6cm) in a light green-grey siliceous matrix.		- weak epidote alteration - has a graphitic appearance	disseminated bleby and fine pyrite - 1%	Geochem #3740 71.0 - 72.0
72.0 to 77.35	Rhyolite Breccia	Colour - grey Rhyolite Breccia - consists of lighter grey-white aphyric - aphanitic rhyolite fragments floating in a siliceous darker grey matrix. Poorly sorted, non-bedded breccia. <20% subangular fragments - massive section from 74.96 - 75.29m		Badly broken from 75.35 to 77.35, weakly chloritic	<1% disseminated pyrite	Geochem #3741 72.30 - 75.30
77.35 to 86.0	Andesitic tuff/lapilli tuff	Andesitic unit - sections are massive, aphanitic and aphyric with fine 1-2mm mafic spots (possible frags) may be a tuff or dykes - sections with distinct angular chloritic fragments in a siliceous matrix - Tuff/lapilli tuff		Unit is badly broken and blocky - weak chlorite alteration - weak epidote alt. locally	trace pyrite	
86.0 to 86.50	Dacitic Tuff	Colour - pinkish-grey Massive, aphanitic aphyric unit - fine (<0.5cm) fragments locally recognized		pink hematitic staining	trace disseminated pyrite	

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86.50 to 86.74	Andesite Lapilli tuff	Colour - green-grey Aphanitic, aphyric andesitic fragments up to 4cm in a lighter matrix - framework supported, massive and poorly sorted unit		Weak chlorite and epidote alt.	trace pyrite	
86.74 to 87.75	A n d e s i t e dyke	Colour - dark green-grey Grain Size - aphanitic Massive, aphyric				
87.75 to 88.85	Feldspar Porphyritic Andesite Dyke	Colour - light green-grey 8% epidotized feldspar phenocrysts - <3mm - aphanitic groundmass		weak epidote alteration		
88.85 to 89.0	Rhyolite Dyke?	Colour - buff-cream Grain Size - aphanitic Chips of massive rhyolite				
89.0 to 89.90	Massive Andesite Dyke or Tuff	Colour - dark green Grain Size - aphanitic Aphyric massive andesite - badly broken & blocky				

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89.90 to 110.34	Andesitic lapilli tuff	Subangular dark green aphyric aphanitic andesite fragments up to 3cm, few dacitic fragments with chloritic rims, odd feldspar phytic fragments in a lighter green aphanitic matrix - poorly sorted, chaotic, matrix supported breccia containing up to 30%-40% fragments - sections of massive andesite maybe large blocks or beds of fine tuff or dyke - very blocky		Weak chlorite alteration, minor and localized epidote alteration	Trace disseminated and fracture pyrite	Geochem #3742 91.14 - 93.57 F e l d s p a r p o r p h y r i t i c A n d e s i t e D y k e s f r o m 93.82 - 94.84 and 96.30 - 102.72 A p h a n i t i c r h y o l i t e d y k e f r o m 102.72 to 109.0, cut by basalt dyke from 105.76 - 105.95. All dyke contacts lost to ground core *48% recovery from 94.79 - 102.72
110.34 to 114.91	Heterolithic Andesite lapilli tuff	Colour - green Framework supported poorly sorted, chaotic breccia. Fragments range to 5cm and consists of a) light grey to pink/orange aphyric, aphanitic rhyolite subangular - angular b) Finer andesitic fragments grade into matrix - fine andesitic matrix - core badly broken and blocky		Weak but pervasive chlorite alteration - faint hematitic alteration of felsic fragments	Trace pyrite	
114.91 to 115.7	Andesite Dyke	Colour - dark green Grain Size - aphanitic Aphyric, massive - blocky & broken core	contact's lost			

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115.7 to 133.17 E.O.H.	Rhyolite Dyke	Colour - light grey-buff/green Grain Size - aphanitic Aphyric, massive, homogenous rhyolite - cut by quartz veins @ 75° to CA - mafic section from 120.07 to 120.25 may be an andesite dyke (contacts lost) - similar 10cm wide mafic section @ 118.10		Fresh looking, weathered		Aphanitic basalt dyke and feldspar prophyritic andesite dyke from 122.22 to 129.66 - badly broken ground. *Hole host at 133.19m, 80' of rods (core barrel/bit) in hole.

LITHOGEOCHEMISTRY

MAJOR OXIDES

TRACE ELEMENTS

SAMPLE NUMBER	FROM (m)	TO (m)	MAJOR OXIDES										TRACE ELEMENTS									
			SiO ₂	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	FeO	MnO	TiO ₂	Ba	ppm Cu	ppm Zn	% Pb	ppm Ag	ppb Au	Zr				
3734	41.15	46.30	72.01	13.83	0.46	1.18	4.70	1.56	2.99	0.09	0.49	.041	150	190	.012			.009				
3735	46.30	47.40	59.88	15.75	1.73	3.32	3.32	1.95	7.25	0.24	0.86	.039	292	262	.013			.010				
3736	54.73	57.91	52.75	16.23	1.99	4.60	2.89	1.82	11.00	0.33	0.94	.059	420	239	.016			.005				
3740	71.0	72.0	55.61	16.99	0.15	4.72	0.05	3.39	11.10	0.31	0.58	.054	62	152	.017			.005				
3741	72.30	75.30	74.23	9.03	0.20	2.72	0.61	1.73	4.30	0.13	0.41	.035	92	82	.014			.005				
3742	91.14	93.57	55.87	19.52	0.61	5.07	4.11	2.05	7.11	0.32	0.70	.026	32	172	.015			.008				

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137.16 to 137.45	Flowbanded Rhyolite	Colour - grey Coarsely spherulitic (3-4mm) light coloured irregular laminae with thin irregular more chloritic green laminae - flowbanded, spherulitic vitro- phyric rhyolite - loose fragments at beginning of unit are ground chips of dacite?	Banding @ 75° to CA	Fresh		
137.45 to 147.82	Feldspar Porphyritic Dacite- Rhyodacite Dyke	Colour - light grey-green to buff-white 6% feldspar phenocrysts <3mm - aphanitic groundmass - color change from light green- grey to buff white at 142m.	contact at 137.45 @ 25°, ctc at 147.82 at 25° and sheared			
147.82 to 148.70	Rhyolite Breccia	Colour - grey-green Broken core-blocky breccia consists of chloritized and sericitized shard-like lapilli sized fragments of altered vitrophyre (rhyolite hyaloclastite) floating in a light grey-pink siliceous rhyolitic matrix.	Dyke Bounded	Sericite/chlorite alteration of vitrophyric fragments	Trace pyrite	R h y o l i t e flowbreccia
148.70 to 150.26	Feldspar Porphyritic Rhyodacite Dyke	Colour - buff white Blocky, broken ground - 64% recovery - 5-6% feldspar phenocrysts - aphanitic groundmass - hematite stain along fractures	75° at 148.70 ctc at 150.26 lost			

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150.26 to 153.5	Flowbanded Rhyolite Flow (Roy Rhyolite)	Colour - light green-grey Grain Size - aphanitic Massive and flowbanded aphyric and aphanitic rhyolite - flowbanding a result of alternating light grey, green to light green laminae up to 2cm wide at 60° to CA - <1% quartz lithophysae or amygdules (up to 2cm) with faint spherulitic coronas - weak insitu breccia - mottled texture a result of spherulitic recrystallization	Dyke Bounded	Fresh looking, not altered.	Trace disseminated pyrite	Geochem #3750 150.30 to 153.50
153.50 to 154.25	Feldspar Porphyritic Andesite Dyke	Colour - drk green - aphanitic groundmass - weakly flowbanded - 3-5% feldspar phenocrysts	65° at 153.5 sheared at 40° at 154.25			
154.25 to 154.70	Sheared Rhyolitic Vitrophyre- hyaloclast- ite	Colour - green Sheared and foliated sericitized and chloritized rhyolite vitrophyre - base of flow? - fine hyaloclastite texture - foliated at shallow angle to CA		chlorite/sericite altered vitrophyre	Trace pyrite	
154.70 to 160.0	Dacitic vitric tuff	154.70 - 154.80 Irregular light grey to grey-pink bands or beds of ash tuff 154.80 - 160 Dacitic tuff, well sorted, matrix supported - up to 20%, <1cm dark green aphanitic aphyric "vitric" shard-like fragments - aphyric lighter green siliceous matrix - irregular quartz veins at 60-85° to CA - few irregular jasper veins <10° to CA		Unit is weak to moderately chloritized throughout with a distinct pink cast (hematite) from 154.70 - 158.50	- fine disseminated pyrite from 154.70 - 155.70, and decreases after 155.70 - pyrite concentrated with quartz veins (1% py)	Geochem #3751 154.80 - 160.0

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160.0 to 165.4	Heterolithic Lapilli tuff (Andesitic) and ash/ tuff beds	<p>Colour - green</p> <p>Poorly sorted breccia, massive chaotic and framework supported. Fragments range from 3mm to 15cm and consists of:</p> <p>a) green to dark green andesite, (predominate) aphyric and aphanitic, some weakly epidote altered</p> <p>b) speckled andesitic tuff</p> <p>c) light grey to pink grey felsic fragments</p> <p>- aphyric matrix is a fine, dark grey-green, andesitic ash</p> <p>From 164.80 to 165.4 - disrupted laminae/beds of white to grey felsic ash (resemble quartz veins superficially) surrounding fragment of andesite - although disrupted bedding crudely @ 40-50° to CA.</p> <p>A possible internal contact at 164.33m @ 60° CA marked by a 0.5 - 2cm wide jasper bed that drapes over fragments and extends into matrix between underlying fragments but does not occur above jasper bed. Tops are up hole.</p>		Weak to moderate chlorite alteration of fragments.	Trace pyrite throughout from 164.8 - 165.4 ash contains fine disseminations and clots of pyrite (1%) with trace chalcopyrite.	
165.4 to 169.85	Dacitic Tuff (vitric)	<p>Colour - green</p> <p>Fine, massive, chloritic dacitic tuff with 10% fine (1cm) darker green aphyric/aphanitic fragments (vitrophyric?) in a light green matrix</p> <p>- some fine mafic crystals?</p>		Unit from 165.4 to 167.2 is insitu brecciated and shattered by veins of fine, grey-white cherty quartz and black chlorite.	Trace pyrite	Amygdaloidal, feldspar porphyritic andesite dyke from 168.5 - 169.60 at 40° to CA

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169.85 to 174.60	Heterolithic Lapilli Tuff Andesitic	Identical to unit from 160 - 165.4 except latter lacks jasper or fine felsic ash beds	contact at 169.85 @ 40° ctc at 174.60 dyke bounded	Weak to moderate chlorite alteration.	Trace pyrite	Amygdaloidal andesite dyke from 172.93 - 174.60 @ 60° to CA
174.60 to 180.55	Dacitic Tuff (vitric)	Colour - green Same as unit from 165.4 to 169.85 above.		Weak chlorite alteration.	Trace pyrite.	Mafic amygda- loidal Andesite dyke from 176.30 to 179.85 at 65° to CA
180.55 to 188.36	Rhyolite (Rhyodacite) flow	Colour - light green grey 180.13 to 182.0 Rhyolite breccia - subangular to angular fragments of aphyric, aphanitic rhyolite that range in size from 0.5cm to + 20cm. Framework supported, with a more "chloritic" (?) vein-network matrix with disseminated pyrite 182.0 - 188.36 Massive, rhyolite, locally a breccia - grades into overlying flow-breccia and into a brecciated base. Basal breccia consists of blocks, up to 20cm, of massive rhyolite separated by a fine light green to green clastic unit - hyaloclastite/ vitrophyre. Chloritic shear @ 20° to CA at 188.38m		- dark colour of unit suggest pervasive chlorite alteration. Matrix to flow-top breccia is chloritized.	Disseminated and bleby pyrite (1%) and trace chalcopyrite throughout but concentrated in matrix to flow-top breccia.	Geochem #3752 181.66 - 186.53

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188.36 to 233.47 E.O.H.	Feldspar Porphyritic Dacite Flow/ dome	<p>Colour - dark grey-green 188.36 - 189.10 Breccia consists of grey-white aphyric felsic fragments, feldspar porphyritic (6% Feldspar phenocrysts) Dacite fragments and irregular chloritic fragments. Fragments are <6cm in size, and subangular in form. Siliceous green matrix. Framework supported, massive & poorly sorted flow breccia. 189.10 to 233/47 Feldspar porphyritic dacite massive flow. 6-8%, 2-6mm feldspar phenocrysts- subhedral in form in an aphanitic, aphyric grey-green dacitic groundmass Monolithologic flow breccia with Feldspar porphyritic dacite fragments from 191.25 to 200.0m. Aphyric to weakly feldspar porphyritic grey siliceous matrix. Identical flow breccia from 202.5 to 206m and 269.5 to 212.05m. Few thin (<3-4mm) quartz veins at 85-60° to CA</p>		<p>Feldspar intact but weakly epidotized. - blotchy mottled, colouration of dacite may reflect weak & localized chlorite alteration.</p>	<p>Minor pyrite as disseminations in groundmass. Trace chalcopyrite.</p>	<p>Geochem #3753 192.32 - 196.29 Magnetic black w e a k l y amygdaloidal aphanitic basalt dyke from 215.21 to 220.20 @ 10° to CA. Identical basalt in pieces of core within broken zone from 214.70 - 214.90 Geochem #3754 230.42 - 233.47</p>

LITHOGEOCHEMISTRY

MAJOR OXIDES

TRACE ELEMENTS

SAMPLE NUMBER	FROM (m)	TO (m)	MAJOR OXIDES										TRACE ELEMENTS									
			SiO ₂	Al ₂ O ₃	CaO	MgO	Na ₂ O	K ₂ O	FeO	MnO	TiO ₂	Ba	ppm Cu	ppm Zn	% Pb	ppm Ag	ppb Au	Zr				
3750	150.30	153.50	76.31	12.25	1.06	1.56	2.72	2.63	1.08	0.08	0.06	.027	11	30	.125			.005				
3751	154.80	160.0	59.58	17.93	0.17	7.34	0.03	3.60	8.22	0.37	0.88	.026	150	226	.026			.005				
3752	181.66	186.53	67.60	15.57	0.72	2.43	6.48	0.83	3.60	0.18	0.41	.010	9	94	.010			.007				
3753	192.32	196.29	65.56	16.73	1.17	3.07	5.81	1.23	4.05	0.25	0.44	.014	8	57	.013			.008				
3754	230.42	233.47	65.05	16.77	1.07	3.26	5.94	1.14	4.23	0.25	0.42	.016	7	62	.026			.009				

Hole No. IR 85-06

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