

Acid Test Results

Footage	Angle of Hole from Horizontal	Bedding Angle with Core Axis	Cleavage Angle with Core Axis
300	46	62	65
540	44	43	43(?)
780	42	41	46
990	35	23	68
1320	29	52	77

Notes: Twenty-six thin section heels have been cut. Sixty composite and individual samples have been sent in for analysis. Analytical results follow in Table A-5. Detailed log is available for study.

CONDENSED GEOLOGIC LOG FOR DDH RR-2

Hole drilled at a 43° angle and an azimuth of 348°.

0'-11' Overburden.

11'-553' T.D. Pale to dark brown, siliceous biotite-garnet schist and semi-schist. Rock is typically very fine-grained. Recrystallized. Unit contains numerous white to pale brown, more siliceous laminae and thin beds; and fewer thin (3 cm) green chloritic, tuffaceous layers. Unit as a whole is believed to be metasediments (tuffaceous) and locally contains 1-4 mm relict quartz-plagioclase volcaniclasts. Mode of darker bands: 20-40% biotite, muscovite, phlogopite; 40-65% quartz; 0-25% pink garnets; 5% plagioclase; and a trace of carbonate. Mode of paler brown bands: 50-75% quartz; 5-50% plagioclase (sodic); 0-20% pink garnet; 5-10% biotite (and other micas); 1% chlorite; and a trace of carbonate. Unit contains 1/2-5% pyrite and 0-1/2% chalcoppyrite, in veins, minor veinlets and as disseminated grains. Unit contains local, deformed, irregular milky-white quartz veins and bursts. There appear to be several cross-cutting sets of these, with thicknesses up to 2 1/2'. Besides quartz, these veins and bursts contain local vugs, biotite, chlorite, pyrite, yellow muscovite, garnet, calcite, epidote, plagioclase, and bent-brecciated tourmaline. More siliceous (less ductile) laminae-beds are often cut by hairline fractures with minor chloritization, carbonatization, and albitization(?). These internal fractures form-pseudobreccia patterns. Unit also contains minor veinlets with red fluorescent calcite. Other pseudobreccia intervals are associated with local brecciation and thin ultramylonites. Breccia zones also have associated chloritic-argillitic alteration and are typically garnet free. Fabric of bedding is generally subparallel to schistosity, with local minor folds and kinks. Rock is much flattened and has local boudinage. Recrystallization appears to have subdued schistosity locally to form a semischistose fabric. It has also healed the fracturing-brecciation of the rock, even though core is locally

broken. Local graded beds occur but recrystallization makes younging direction difficult to determine.

Acid Test Results

Footage	Angle of Hole from Horizontal	Bedding-Schistosity Angle with Core Axis
300	31	50
553	33	57

Notes: Thirty-three thin and polished thin sections have been made and are available for study. Forty-two composite and individual core samples and rock samples have been sent in for analysis. Analytical results follow in Table RR-2. Compared with DDH RR-1, rock in RR-2 is much more uniform. Detailed lithologic and structural log are available for study.

CONDENSED GEOLOGIC LOG FOR DDH RR-1

Drilled at a 48° angle and an azimuth of 180°.

0'-6' Overburden.

6'-329.8' Interbedded intermediate-felsic-mafic metatuffs, tuffaceous greywacke, and magnetite laminations. Rock is now fine to medium-grained semi-schist, with much flattening, folding and local breccia. Moderate to well developed schistosity subparallel bedding. Volcanic fragments locally coarse lapilli-agglomerate originally.

Mode of intermediate-mafic metatuff (grey-green): 25-40% mafics and alteration products (chlorite, actinolite, hornblende); 5% quartz-carbonate veins; 40% quartz-carbonate veinlets or compositional laminae; 15-30% quartz-carbonate-plagioclase (more felsic component of groundmass).

Mode of intermediate-felsic metatuff (brown-grey) similar to above except only 10-30% mafics and alteration products; and 15-45% felsic component. Sheet silicates largely sericite-biotite.

Mode of the intermediate tuff-tuffaceous greywacke (green-grey): 10-30% chlorite; 10-30% biotite; 10-20% muscovite; 20-40% quartz; 10-15% plagioclase; 10-20% actinolite; and 0-5% carbonate.

Intermediate-mafic tuff intervals are 6'-13.5' and 33.5'-35.5'. Felsic-intermediate tuff is from 13.5'-18.0'. Other intervals predominantly intermediate metatuffs. Local scattered 1 mm magnetite grains (up to 5% of rock) and 1-10 mm dark green hornblende phenocrysts(?) porphyroblasts (up to 10% of rock) from 35.5'-271.5'. Magnetite and hornblende appear to vary antithetically (on the small scale). Laminae with up to 80% magnetite occur in close proximity to

felsic tuff intervals from 271.5'-329.8' and is fairly magnetic. This interval also contains hornblende phenocrysts-porphyroblasts.

Veining is relatively ubiquitous, comprises 5% of the rock, and contain the following minerals: quartz, calcite, ankerite, pyrite, pyrrhotite, chalcopyrite, chlorite, muscovite, and K-feldspar. Veins are often brecciated-deformed-irregular. Some appear to be bursts where tension openings have sucked in the mineralogy of the surrounding rock. Several sets of veins appear to be present. Sulfides of unit consist of trace-5% pyrite and pyrrhotite, and up to 1/2% chalcopyrite. Basaltic dike from 184.2'-186.3'.

329.8'-477' Grey brown and green grey, fine-medium grained mica schist-semi-schist. Generally intermediate-felsic metatuff with irregular laminations. Similar to previous unit, except it is more biotitic-sericitic, calcareous, less chloritic-amphibolitic, with this trend progressing with depth. Rock is much flattened, with local brecciation, fold closures, and broken core. Unit contains local magnetite grains, hornblende phenocrysts-porphyroblasts, and almandine garnets (predeformation). Unit contains 5-10% veins with the following minerals: quartz, calcite, ankerite, chlorite, biotite, muscovite, and K-feldspar. Unit also contains intervals cross-cut by hairline fractures with associated sericitic(?) argillic alteration. Unit contains largely disseminated 1-5% pyrite-pyrrhotite, and up to 1% chalcopyrite. Coarse lapilli are locally found.

477'-764.3' Fine-medium grained, medium-dark brown, grey brown to pale green-grey (altered) quartz eye schist-semi-schist. Strained, blue quartz eyes 1-2 mm are set in a siliceous-micaceous matrix with biotite, sericite, talc, actinolite, plagioclase, and local chlorite. Very little carbonate excluding veins (1-2% average). Original rock was laminated dacite-rhyodacite(?) tuff (with minor andesite) containing local coarse lapilli, and flattened, sericitized glass shards(?). Unit has much flattening, with local kink banding, folds, brecciation, and cross-cutting hairline fractures with light green (sericite?) epidote(?), actinolite(?), chlorite(?) alteration. Other veining minor compared to previous units. Vein mineralogy includes quartz, ankerite, chlorite, biotite, muscovite, pyrite, plagioclase, K-feldspar, and minor calcite. Pyrite is less than 1% (disseminated), except in veins and more mafic intervals (to 2%). Chalcopyrite is a trace at most except for 1/2-1% in more mafic (chloritic) intervals.

764.3'-922.9' Fine-grained, interbedded interlaminated, pale to medium grey green-grey brown-green semi-schist and schist. Major mineralogy of unit is biotite, chlorite, quartz, hornblende, sericite, plagioclase, carbonate, and actinolite. Original rock was tuffaceous clastic and felsic to intermediate tuffs that become more mafic with depth. Rock is much flattened, with local fold closures that are often disharmonic, are brecciated, and have sheared limbs. Rock fabric changes from a well developed planar schistosity (non brecciated rock) at the top of the unit, to a less well developed linear fabric (brecciated rock). Unit is also recrystallized which obscures the deformational fabric. Unit lo-

cally contains quartz eyes, magnetite blebs-laminae, and locally is very amphibolitic. Veining is fairly minor, with the following mineralogy: quartz, ankerite, calcite, biotite, plagioclase, pyrite, and hornblende. Sulfides are less than 2%, and is predominantly pyrite in the veins. Some of the sulfide are blebby pyrrhotite and minor chalcopyrite.

922.9'-958.1' Fine-grained, medium-dark green-grey green chlorite-talc-biotite-plagioclase-sericite, somewhat siliceous schist. Original rock was mafic-intermediate (andesitic?) tuff. Rock has good planar fabric. Unit contains attenuated laminae and/or coarse-grained clasts, with 1/2-2% pyrite-pyrrhotite and 1/4-1/2% chalcopyrite interstitially (slightly magnetic). Local veins and quartz-biotite-pyrite masses make up 5% of rock.

958.1'-996.5' Fine-medium grained, light-medium grey siliceous schist-semi-schist with sericite, biotite, and plagioclase. Originally siliceous greywacke(?). Unit contains minor quartz eyes, brecciation, and fold closures. Planar fabric weakly predominates over linear fabric. Unit contains little carbonate.

996.5'-997.5' Fine-grained, medium-dark, yellow green, altered oxide-sulfide bearing metapicrite(?) dike. Mode: 5% pyrite-pyrrhotite; 5% magnetite; 15% quartz-ankerite veins; 75% serpentinized, epidotized(?) olivine(?). Unit fairly magnetic. Unit biotitic at contacts.

997.5'-1006.5' Light to medium grey siliceous schist breccia-pseudobreccia fragments (with some orientation); generally subangular-abraded, with poorly developed slickensides, and sizes up to 6 cm. Rock is recrystallized, and also contains local mylonite. Sulfides in pseudobreccia fractures increase with depth (up to 1% chalcopyrite, up to 5% pyrite-pyrrhotite). Rock fragment lithology appears similar to 958.1'-996.5'.

1006.5'-1295' Fine-grained, medium-dark brown, green, and grey to pale grey-white, interbedded-interlaminated semi-schist. Lithologies similar to previous lithologies. Rock is recrystallized, and fairly massive without good foliation in general. Original rock was clastics, volcaniclastics, and possible dikes or flows. Unit locally contains breccias, magnetite grains and laminations, good lineation, fold closures, coarse lapilli, non magnetic oxides, and black chert. Bedding tends to exist, on the average, at a shallower angle to the core axis than previous units. Quartz bursts and veins, locally with ankerite, calcite, biotite, hornblende, pyrite, actinolite, and tourmaline are fairly ubiquitous although mineralogy varies. Unit contains trace-1% chalcopyrite, and 1/2-5% pyrrhotite-pyrite. Sulfides occur as disseminations, and in laminae with oxides. Concentrations tend to be higher in chloritic, more mafic intervals.

1295'-1312' Fine-medium grained, green chloritic-amphibolitic schist with minor siliceous laminae, and hornblende porphyroblasts, which increase with depth. Fabric becomes less planar, more linear-mylonitic with depth. Rock

is recrystallized. Sulfides (1/4-3% pyrite, and trace chalcopryrite) less evenly distributed than normal. This includes a vuggy, brecciated quartz vein with pyrite cement at 1303.7'-1304'. Other veins-bursts are calcite, ankerite, and quartz.

1312'-1602' T.D. Fine-medium grained, interlaminated-interbedded grey brown, brown grey, white, and green semi-schists. Original lithologies similar to previous units. Rock is recrystallized, and relatively massive. Rock structurally contains local breccia, pseudobreccia, and fold closures which are often sheared, jumbled, and/or complexly deformed with inconsistent orientations. Rock lithologically contains local garnets, and fragments with hornblende and tourmaline. Veins and bursts are typically irregular-deformed, and include the following mineralogy: quartz, ankerite, calcite, and minor sulfides. Unit contains 1/4-3% pyrite-pyrrhotite (with less pyrite and more pyrrhotite with depth), and trace-1/2% chalcopryrite.

Acid Test Results

Footage	Angle from Horizontal	Bedding Angle with Core Axis	Schistosity Angle with Core Axis
142	41°	35°	35°
542	22 1/2°	70°	70°
862	17°	55°	75°
1590	23°	48°	-

Notes: RR-1 with depth has changed its structural fabric from a more schistose one in which schistosity and bedding are subparallel-superimposed; to a weaker, more linear component (bedding-schistosity are less parallel semi-schistose, and, or shearing has modified the planar fabric found in the upper part of the hole). There are several generations of veins, which along with the fabric, suggest a rather complex deformational-metamorphic history. Rock locally contains garnets and porphyroblastic amphiboles, and may contain sillimanite. Locally chalcopryrite-pyrite-pyrrhotite may oxidize somewhat, leaving anomalous colors that may be confused with free gold. Sixty-one composite and individual samples have been analyzed (see Table RR-1 below). Highest gold values (3560 and 2240ppb) came from intervals (899.4'-900.1', and 1303.5'-1304.0' respectively) containing pyrite cemented brecciated quartz veins. Quartz veins often are brecciated, but they are usually healed with quartz or carbonate. Outcrop and float samples of the area have analytical results reported in Table RR-2. Forty-eight thin and polished sections are available for study, along with lithologic and structural logs.

CONDENSED GEOLOGIC LOG FOR DDH BL-1

The hole was drilled at a 90° angle (vertical).

0'-130' Overburden.

130'-132.4' Fine to medium-grained layered gabbro with pyroxenite lenses oriented at about 80° to the core axis.

132.4'-135' Medium to coarse-grained norite-anorthosite with pegmatoidal aspects. The interval 130'-135' may reflect boulders.

135'-200' Equant microgabbro with faint relicts of layering and lenses of clinopyroxene pegmatoid.

200'-218.5' The same, with contorted coarse-grained to pegmatoid clinopyroxene lenses showing a steady increase of oxide content downwards up to about 30%. Faint layering subparallel to core axis. At 202' bornite and chalcopryrite-bearing clinopyroxene pegmatoid lens occurs almost perpendicular to the core axis. A cataclastic and chloritized granite dike subparallels the core axis and transects at 212'-215.8'.

218.5'-225.9' Oxide-rich equant microgabbro (30-50% oxide) with pegmatoidal clinopyroxene-oxide lenses.

225.9'-235.1' The same with oxide content up to 90% and chalcopryrite + bornite content up to 10% in ultramafic lenses. Intercalation of cataclastic and chloritized diorite subparallel core axis.

235.1'-252.2' Equant microgabbro with oxide content decreasing from 90% downwards to about 30%, with intercalations of an aplite dike up to 2" thick which subparallels to core axis.

252.2'-306.5' Oxide-bearing equant microgabbro (5-15% oxide). At 255.3'-255.8', a cross-cutting coarse-grained granophyric dike occurs about 70° to core axis. Intercalations of disseminated and impregnated bornite-rich spots associated with pegmatoidal clinopyroxenite lenses are found at 287'-292'.

306.5'-321.7' Equant microgabbro with contorted coarse-grained clinopyroxenite layers and feldspathic pockets and veins.

321.7'-563.0' T.D. Equant microgabbro with pegmatoidal clinopyroxenite, plagioclase lenses and clots, with faint layering subparallel core axis.

Intercalations of granite dikes and veins about 45° to almost parallel to core axis occur at 336.9', 364.9', 388.4'-399.8' and 492'-492.6'. Retrogressive crystallization with chlorite along joints, associated with feldspathic pockets is observed at 339.2'-348.6' and 429.3'-438.8'. Fragmented coarse-grained clinopyroxene veins, represented as clots, are present at 476.2'-501.5'. Intercalations of olivine and chalcopryrite-bearing lenses about 70° to core axis, occur at 455.4'-479.2'.