

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'.

**Notes:** A detailed log is available for study. Four thin sections and three polished thin sections were made. Four core samples were assayed. Point analyses of coarse-grained ultramafics at depths of about 194' and 232.2' yielded copper and gold contents of 0.75-1.75% and 11-380 ppb, respectively and 1-4 ppm silver at 134.9', 194.3', 202' and 232.2'. The analytical results follow in Table BL-1.

## CONDENSED GEOLOGIC LOG FOR DDH IS-1

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

### 0'-109' Overburden.

**109'-121.3'** Mixed section of medium to coarse-grained laminated and chalcopyrite-bearing oxide gabbro and fine to medium-grained oxide-rich gabbro, with cross-cutting coarse-grained anorthosite veins(?).

**121.3'-169.4'** Alternation of mainly oxide-rich equant microgabbro having plagioclase xenocrysts and medium to coarse-grained brecciated gabbro, with cross-cutting medium to coarse-grained chalcopyrite-bearing clinopyroxene-magnetite veins and clots. Magnetite is present in a selvage against microgabbro. Mineral mode is variable. Fine-grained rocks range from 50-80% plagioclase, 15-25% clinopyroxene (locally both clinopyroxene and orthopyroxene are present in a ratio of approximately 3:1), 5-25% opaques and up to 1% apatite. Coarse-grained rocks generally are 50-60% plagioclase (locally 75-80%), 15-30% clinopyroxene, 5-20% opaques, and a trace of biotite. Veins are up to 60% pyroxene, 25% plagioclase, 5+ % opaques, and possibly olivine(?) to 5%. Trace of disseminated sulfides are present throughout.

**169.4'-218.7'** A mixture of equant microgabbro, medium-grained gabbro with plagioclase and (brecciated anorthosite) xenoliths, laminated anorthositic gabbro and very fine-grained microgabbro or hornfels.

At 213.1'-218.7' coarse-grained leucocrate chalcopyrite-bearing brecciated polyschematic rock occurs composed of coarse-grained plagioclase + apatite + clinopyroxene with intergranular graphic granite.

Mineral mode of medium-grained to coarse-grained rock has a range of: 60-90% plagioclase, 3-20% clinopyroxene, 1-20% opaques, and trace-1% apatite. Fine grained to very fine-grained zones have a mineral mode generally in the range of 70-90% plagioclase, 5-20% clinopyroxene, 4-15% opaques and less than 1% apatite. One zone, in the upper part of this interval, has a mineral mode of 40% opaques, 30% plagioclase, 30% clinopyroxene, and a trace of apatite. Three polished sections gave the following range of values for opaque minerals: 45-70% magnetite, 25-39% ilmenite, 0-25% pyrrhotite, and a trace-5% chalcopyrite. The mineral

mode of xenoliths is approximately 60% pyroxene and 40% plagioclase. Two of the polished sections were taken from the hornfelsed fine-grained to very fine-grained rocks, and one came from an oxide-rich vein.

**218.7'-440.6'** Equant microgabbro with coarse-grained pyroxenite-oxide veins and clots with very fine-grained hornfelsic(?) intercalations.

Very fine-grained greenish gabbro intercalation with strongly pleochroic orthopyroxene at 262.3'-277.7'. Chalcopyrite showings, associated with coarse-grained pyroxenite veins with strongly pleochroic orthopyroxene at 300'-307'. Relatively high concentration of pyroxenite veins and clots which are bornite and chalcopyrite-bearing at 359'-406.5'. Section with many flattened leucocrate xenoliths at 388'-396.4'.

Sulfides occur as fine disseminations, scattered blebs and interstitial concentrations, mostly associated with flattened xenoliths and veins with the coarser-grained pyroxene-rich oxide-bearing segregations. Chalcopyrite is generally most abundant followed by pyrrhotite, bornite and possibly pyrite. The mineral mode of the oxide-bearing microgabbro ranges generally from 60-90% plagioclase; 5-25% pyroxene, of which up to 10% may be orthopyroxene and the remainder clinopyroxene; 5-15% opaques; trace-1% apatite.

The mineral mode of the coarser grained oxide-bearing pyroxenite veins ranges from: 65-90% pyroxene, of which 25% may be orthopyroxene; 1-30% plagioclase; and 1-30% opaques.

Examination of three polished sections gave the following range of opaque mineral modes: microgabbros (2 locations) - 60-85% magnetite, 10-40% ilmenite, 0-.5% chalcopyrite; veinlets (1 location) - 30% magnetite, 10% ilmenite, 50% chalcopyrite, 5% bornite, 5% pyrite(?); pyroxenite (1 location) - 24% magnetite, 6% ilmenite, 70% pyrrhotite; flattened xenoliths (1 location) - 10% magnetite/ilmenite, 75% bornite, 15% chalcopyrite.

**440.6'-458.2'** T.D. Intrusive breccia of fine to medium-grained gabbro and coarse-grained gabbro to anorthosite with intergranular quartz. Plagioclase xenocrysts up to 3.5 cm in length. Scattered small grains and blebs of chalcopyrite, apparently associated with zones of oxide-rich gabbroic anorthosite. Mineral mode: plagioclase 85-90%; clinopyroxene 10-15%; oxides .5-1%; biotite, trace.

**Notes:** A detailed log is available for study. Twenty-seven thin section and seven polished thin sections were made. Gold values of 1-1.1 ppm were found at 170.2', 301.8' and 167.1'. Thirteen rock samples were assayed. The analytical results follow in Table IS-1.

## CONDENSED GEOLOGIC LOG FOR DDH R-1

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