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 clinopyroxenite-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% plagio-clase, 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 gabbronorite 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 proxenite 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).