DRILL LOG — HUMBLE OIL & REFINING CO. – EASTERN DISTRICT – Lake Superior P

DRILL HOLE NO. R-2-1A | LOCATION: STATE MINN | COUNTY KOOCHICHING se16sw15

PROSPECT RAINY RIVER | BUDGET NO. E-1142 | DEPTH 473' | ALTITUDE -45° s50°e | 1509N 5

DATE COLLARED AUG 19, 1969 | DATE COMPLETED AUG 27, 1969 | CORE RECOVERY 100 | OVERBURDEN

CORE LOGGED BY PG SCHMIDT | DATE SEPT 9 1969

PROPERTY: MINERALS MYRON SMART & STATE OF MINN

CORE: NQ 88 | BQ 303

CASING

PLUGGED

SUMMARY DRILL LOG 1" = 150'

DEPTH	UNIT
88–145	Greywacke
145–233	Greywacke & Granite Lit-par-lit, granitized
233–322	Greywacke semi-massive sulfides & graphite 233' to 285'
322–341	Felsic volcaniclastic semi-massive sulfides & graphite
341–422	Greywack graphitic, minor sulfides
422–430	Mafic volcaniclastic, minor sulfides
430–473	Greywacke

SUMMARY MINERALIZATION

DEPTH	ANALYSES	
233' to 285'	Po 5% to 10%	Cu 40 to 160 ppm, Zn 75 to 1700 ppm
322' to 341'	Po 5% to 20%	Cu 85 to 150 ppm, Zn 90 to 805 ppm
365' to 400'	Po 2% to 7%	Cu 100 to 150 ppm, Zn 90 to 1500 ppm
443' to 448'	Po 5%	Cu 630 ppm, Zn 2000 ppm, Ag 2 ppm

REMARKS
Offset to R-2-1, 15
Entire hole consists metasediments with low values.

Legend: Po ——— Py ——— Graphite; Cu, Zn, Pb, Ni, Co, Ag (X50)

SCALE: 1" = 10 FT.

DEPTH	THICKNESS	ROCK UNIT	DESCRIPTION
0–88	88	Overburden	
88	13	Greywacke; ∠ 50°-60° to core axis; chloritic (100)	V. fine gr. grey-buff, v. hard dense, thinly banded but indistinct bands, broken bands. Somewhat chaotic but bands are not uneven. Cherty bands, tend to for light colored clasts. Possibly slumped siliceous beds. Po dissem & thin bands Cpy in v. fine beds. Py massive bands in thin chloritic zone.
101	9	Greywacke	V. fine gr. black-grey-buff, v. hard dense, thin banded to massive, banding tends to be sharp but irregular, clastic, many clasts, light colored bands broken, cherty. Po dissem. fine gr. Cpy. tr.
110	17	Greywacke ∠ 60° to core axis	V. fine to fine gr., dk grey, v. hard, dense, thinly laminated, sharp but irreg thickness from ¼" to 3". Small wavy slumps, tends not to be broken into clasts. Po dissem. & thin irreg bands. Cpy. tr.
127	18	Greywacke	fine to v. fine gr., dk. grey, v. dense, hard. massive to mottled, faintly banded, faint irreg. clasts, bands to 2" tend to be coarser gr. Po dissem.
145	88	Greywacke & Granite; Granite ∠ 50°; massive Greywacke; circulation lost at 163'; Granite	v. fine to course gr. med. dk grey, hard, dense units of fine gr. massive Greywacke in mixed med to course gr. Granite - feld, qtz, chlorite. Chlorite, biotite. Inclusions of fine gr. greywacke. Common in granite. Some banding, but mostly irregular separations of units, lit-par-lit bands and stringers. Po dissem fine gr. and thin hairline veinlets. Py tr small blebs. Cpy tr. v. small blebs mostly in Po veinlets. In contact zone, lit-par-lit injections of course hblde granite, contact breccia.
		massive Greywacke; Granite; Dacite porphyritic ∠ 60°; mafic-hbl-rich hornblendite; Greywacke; Granite; Greywacke massive mottled; Granite	fine gr. groundmass feld qtz biotite prominent ⅛"-½" euhedral zoned plag pheno. massive, dense dk grey.
233	24	Chloritic Greywacke; Graphite	fine to med. gr. med. grey, hard, dense, massive, finely mottled with graphitic zones. Graphite zones slumped, irreg thin banding swirls. Chloritic zones with calcite replacement of matrix. Coarse chlorite. Po dissem & thin bands, veinlets generally conformable. Cpy tr. & small blebs mostly in veinlets & Po blebs.
257	47	Greywacke; Graphitic; Graphitic; Graphitic ∠ 50°; Graphitic; Graphitic; 2' Quartz vein qtz-feld.; 10' Quartz; 3' Quartz; 3' Quartz; 3' Quartz	fine-med gr. grey, hard, massive to faintly banded, clasts common, usually finer gr. Irreg. banding - slumps in graphite zones. Po dissem & thin bands, veinlets, blebs. Py. tr. blebs, veinlets. Cpy. v. small blebs w/Po. Granitized zone
304	169	Greywacke & volcaniclastics; slty coarser, thinly banded & massive. ∠ 45°	V. fine-med. gr. grey, hard, dense, weakly banded to massive, mostly massive. Banded zones tend to be coarser gr.
		massive graphite; Felsic volcaniclastic; thinly banded, v. faint mottled. Chloritic fine gr. Carbonate clots.	Po dissem. & v. thin veinlets, blebs, semi-massive. Py. tr. v. small blebs. Cpy. tr. rare small blebs.
		v. fine gr. massive, mottled; Greenish-grey, Chloritic	
		fine gr. v. faintly banded, grey. Massive fine-gr. graphite irreg. slump banding	Po dissem. & small blebs, lenses. Cpy. tr.
		Mostly massive	
		Graphitic	
		fine to med. gr. faintly banded to massive, bands tend to be slightly coarser gr.	
(400)		med.-gr. weakly banded	
		green, chloritic massive, fine-gr. Mafic volcaniclastics	Po dissem & small blebs. Cpy. tr. - rare small blebs w/ Po. Py. tr. small blebs, veinlets.
		Lt. grey fine - v. fine gr. massive, mottled	
		Med. gr. banded, faint, indistinct ∠ 65°	Po. tr.
473 T.D.			

% SULFIDES | PPM 200 400 600 800

100 ppm | 500 ppm | 1000 ppm