

SAMPLE LOG

DRILL HOLE: R. Vilmer #3
PROP. OWNER: Ralph Vilmer
DRILL CONTRACTOR: J-J Drilling Co.
DRILL OPERATOR: Guy
DATE STARTED: 10/17/79
CASING LEFT IN HOLE:

LOC:
LOGGED BY: MRG & DRK
ELEV: 839' surveyed
DATE COMPLETED: 10/18/79
TOTAL DEPTH: 523'

- 40 - 50 - Limestone, gray, silty, trace of pyrite, locally carbonaceous 85%; shale, black, silty 15%
- 50 - 60 - Shale, black, silty 80%; siltstone, greenish, calcareous, fossil coral (Scleractinian?); locally carbonaceous 20%
- 60 - 70 - Siltstone, gray, calcareous, carbonaceous fossil possible broad leafed gymnosperm, trace of pyrite
- 70 - 80 - Shale, silty, calcareous, local carbonaceous plant fragments, trace of pyrite
- 80 - 120 - Shale, gray, silty, micaceous
- 120 - 130 - Shale, gray, silty, micaceous 50%; shale, black, silty, very calcareous, trace of pyrite 50%
- 130 - 140 - Shale, gray, fossil bracheopod imprint, slightly calcareous 60%; limestone, brown, bracheopod shell fragment, silty 40%
- 140 - 150 - Shale, black, silty, very calcareous, trace of pyrite 90%; shale, gray, silty, locally carbonaceous 10%
- 150 - 160 - Shale, black, silty 80%; siltstone, greenish, trace of pyrite, locally carbonaceous 10%; coal fragments 10%
- 160 - 170 - Shale, gray, silty, locally carbonaceous 70%; shale, black, silty, trace of pyrite 20%; siltstone, gray, locally carbonaceous 10%

CORE #1 - 170 - 190.5

- 170 - 190.5 - Sandstone, fine grained, brown to grayish brown, micaceous, with the following distinguishing characteristics:
 - 1/8" thick shale laminae at very top of core (170');
 - Sub-parallel thin carbonaceous and micaceous laminae localized in these intervals: 170.0 to 171.0; 172.3 to 175.0; 177.0 to 177.3; 180.1 to 183.8; 186.0 to 189.1;
 - Thin coal seams: 1/8" thick at 177.05; 1/8" thick at 183.15' 1/16" thick at 187.05;
 - Shale pebbles: 1/4" x 1/2" scattered sparsely from 183.1 to 183.7;
 - Core oozing free oil throughout interval

CORE #2 - 190.5 to 211

- 190.5 - 195 - Sandstone, fine grained, grayish brown to gray; sub-parallel thin carbonaceous and micaceous laminae from 191.8 to 192.6; thin carbonaceous fragments and carbonized plant sections from 192.6 to 193.5; core oozing little free oil
- 195 - 197.5 - Sandstone, fine grained, slightly silty and shaley, light brown to grayish brown; high angle healed fault at 195 oriented approximately 25° from core axis - overlying gray sandstone displaced downward relative to underlying brown sandstone, but magnitude of displacement not discernable from core; (sandstone sample from 194.9 to 195.2 removed from core box); oil odor

- 210 - 215 - Sandstone, fine grained, brown, micaceous, locally carbonaceous 90%; shale, dark gray, silty 10%; U.V. - poor show
- 215 - 235 - Sandstone, fine grained, brown, micaceous, locally carbonaceous; U.V. - poor show
- 235 - 240 - Sandstone, fine grained, brown, micaceous, locally carbonaceous and limonitic; U.V. - poor show
- 240 - 245 - Shale, gray, silty, locally carbonaceous 60%; sandstone, fine grained, brown, micaceous, locally carbonaceous 35%; siltstone, tan 5%
- 245 - 250 - Shale, gray, silty
- 250 - 260 - Shale, gray, silty, trace of pyrite 60%; shale, black, silty, calcareous, trace of pyrite 40%
- 260 - 270 - Limestone, brown, trace of pyrite, silty 40%; shale, gray, silty 30%; shale, black, silty 20%; siltstone, greenish; trace of pyrite 10%
- 270 - 280 - Shale, gray, silty 50%; shale, black, silty, calcareous 30%; siltstone, greenish, trace of pyrite 20%
- 280 - 290 - Shale, black, silty 50%; siltstone, greenish, locally well-rounded brown quartz grains, locally carbonaceous 40%; shale, gray, silty 10%
- 290 - 300 - Siltstone, greenish, locally carbonaceous and locally well-rounded, brown, quartz grains 80%; shale, black, silty 10%; shale, gray, silty 10%
- 300 - 310 - Shale, dark gray, silty
- 310 - 320 - Shale, black, silty 90%; siltstone, gray-green, locally carbonaceous 10%
- 320 - 330 - Siltstone, gray-green, locally carbonaceous 50%; shale, gray, silty 45%; limestone, tan, massive, crystalline 5%
- 330 - 340 - Siltstone, greenish, local concentrations of well-rounded light brown quartz grains (1-3 mm) 45%; shale, gray to black, silty, trace of pyrite 45%; limestone, tan, massive crystalline 10%
- 340 - 350 - Shale, gray, silty, micaceous, locally, carbonaceous 85%; coal fragments, locally being replaced by pyrite 15%
- 350 - 360 - Siltstone, gray-greenish, local concentrations of well-rounded, light brown, quartz grains 60%; shale, gray to black, silty, locally carbonaceous 40%
- 360 - 370 - Shale, gray to black, silty 80%; siltstone, gray-greenish 20%
- 370 - 380 - Shale, gray to black, silty, trace of pyrite 80%; siltstone, greenish 20%
- 380 - 390 - Shale, black, silty, trace of pyrite 50%; siltstone, gray, micaceous, locally carbonaceous, local concentrations of well-rounded light brown quartz 50%
- 390 - 400 - Shale, black, silty, trace of pyrite, micaceous 70%; siltstone, gray, micaceous, locally carbonaceous, local concentrations of well-rounded, light brown, quartz grains 30%
- 400 - 410 - Shale, gray, silty 50%; siltstone, light gray, locally carbonaceous 50%
- 410 - 420 - Siltstone, dark gray, rich in carbonaceous material, micaceous 90%; shale, gray to black, silty, trace of pyrite 10%
- 420 - 430 - Siltstone, light gray to buff, locally micaceous 80%; shale, dark gray, silty, micaceous 15%; shale, black, calcareous, trace of pyrite 5%
- 430 - 440 - Shale, medium to dark gray, silty, micaceous 70%; siltstone, gray to buff, trace of pyrite, local concentrations of sub-rounded to sub-angular quartz grains (1-2mm) 30%

- 440 - 450 - Shale, gray, silty, locally micaceous and chloritic 95%; siltstone, gray to buff, local concentrations of sub-rounded, light brown, quartz grains (1-2 mm)
- 450 - 460 - Shale, gray, silty, trace of pyrite 99.9%; siltstone, buff, trace
- 460 - 470 - Shale, dark gray, silty, micaceous 99.9%; siltstone, buff, trace
- 470 - 480 - Shale, dark gray, silty micaceous
- 480 - 490 - Shale, dark gray, silty, micaceous 99.9%; siltstone, gray to purple trace
- 490 - 500 - Limestone, light gray, silty, limonitic 50%; shale, dark gray, silty, trace of pyrite 30%; chert, white, locally silty 20%
- 500 - 510 - Limestone, white, silty, locally carbonaceous 95%; shale, dark gray, silty, trace of pyrite 5%
- 510 - 520 - Limestone, white, silty, locally carbonaceous 85%; shale, dark gray, silty, micaceous, trace of pyrite 10%; siltstone, gray-greenish, locally micaceous 5%
- 520 - 523 - Limestone, white, silty, locally carbonaceous, trace of pyrite and glauconite 95%; shale, dark gray, silty, trace of pyrite 5%

T.D. @ 523'