

SAMPLE LOG

350' N + 165' E of Gray # 8

DRILL HOLE: MLZ #1 Hiller LOC.: Approx. 2830' FSL; 675' FEL, Sec. 34,
 PROP. OWNER: J.M. & M.J. Hiller T30S, R21E, Neosho Co., Ks.
 DRILL CONTRACTOR: L-K Drilling Co. LOGGED BY: ZHT
 DRILL OPERATOR: H. Lavery ELEV.: +845 topog SURVEY ELEV. 840.18
 DATE STARTED: 6/22/78 DATE COMPLETED: 6/24/78
 CASING LEFT IN HOLE: 45' of 7" O.D. surface casing,
 258' of 4 1/2" O.D. casing, cemented in

TOTAL DEPTH: 265'

- 0- 1 - soil
- 1- 10 - Clay soil and gravel (Driller: "Gravel from 9-12')
- 10- 15 - Limestone, light brown, with abundant coral; river gravel, orange brown, 5%
- 15- 20 - Limestone, medium gray-brown, fine grain, some argillaceous; limestone as above, with coral, 10%; river gravel 5%
- 20- 25 - Limestone, medium to medium-dark gray, sparse fossils, fine grain, 60%; limestone, light brown, coral, 10%; river gravel, orange, 30%
- 23- 25 - Shale, medium dark gray, fissile, 80%; shale, black, fissile, 20%; trace limestone, gray; limestone light brown, coral, gravel
- 25- 30 - Shale, black, 90%; shale, medium gray, 10%
- 30- 35 - Limestone, medium gray, very fossiliferous; limestone, light brown, coral, 5%; orange river gravel, 10%
- 35- 40 - Limestone, dark gray-brown, fine grain, some fossiliferous; trace limestone, light brown, coral; orange river gravel
- 40- 45 - Black shale, 50%; limestone as above 50%; trace orange river gravel
- 45- 50 - Black shale, 90%; shale, light gray, 10%; also light gray selvage; trace brown limestone
- 50- 55 - Limestone, light gray (some medium & dark gray light brown), fine grain
- 55- 60 - Shale, light gray (75%), medium gray (25%),; trace pyrite
- 60- 75 - Shale, medium gray; trace pyrite; some is silty
- 75- 80 - Shale, medium gray, some is silty
- 80-105 - Shale, medium gray, silty
- 105-110 - Shale, medium gray, silty; trace black shale
- 110-115 - Shale, medium gray
- 115-125 - Shale, medium gray; trace brown siltstone
- 125-130 - Limestone, very dark gray, fossiliferous, 35%; shale, black, 35%; shale, medium gray, 30% (Driller: Coal @129-130')
- 130-135 - Coal, black, 30%; shale, black, 45%; limestone, dark gray with trace pyrite, very fossiliferous, 25%; trace brown siltstone
- 135-140 - Shale, medium & dark gray, 85%; limestone, dark gray, fossiliferous with pyrite, 15%
- 140-145 - Shale, black, 55%; shale, medium and light gray, 20%; limestone, dark gray, dark gray-brown, some fossiliferous, 25%
- 145-150 - Shale, black, 60%; shale, light gray, 40% (Driller: shale and lime streaks at 143-146')
- 150-152 - Limestone, dark gray, medium grain, pyritic, fossiliferous (Driller: hit (H₂S) gas at 152'. Smells like rotten eggs)
- 152-155 - Limestone as above; trace light gray shale
- 155-160 - Shale, light gray, silty, 70%; shale, black, 20%; limestone, pyritic, medium gray-brown, fine grain (some oolitic), 10%
- 160-165 - Shale, black
- CFS@166 - Shale, gray with black carbon specks
 Core begins at 167
- 167-168 - Shale
- 168-207 - Sandstone

- 207-215 - Sandstone, dark gray-brown, fine-medium grain, oil
- 215-220 - Sandstone, dark gray-brown, fine-medium grain, minor mica, oil
- 220-230 - Sandstone, dark gray-brown, fine-medium grain
- 230-235 - Sandstone, dark gray-brown (70%) and medium brown (30%), fine-medium grain
- 235-240 - Sandstone, dark gray-brown, fine-medium grain 70%; sandstone, medium brown, fine grain, 30%; trace limestone, medium gray-brown, fine grain
- 240-245 - Sandstone, dark gray-brown, fine-medium grain; trace shale, light and medium gray
- CFS@245 - Shale, medium gray (HL-shale at 242)
- 245-250 - Shale, medium gray; trace light gray selvage, trace pyrite
- 250-255 - Shale, medium gray
- 255-260 - Shale, dark Gray, trace siltstone, medium gray (Driller: hit coal at 259 or 260')
- 260-265 - Shale, black, 50%; shale, light gray, 30%; coal, 20%, also light gray selvage
- CFS@265 - Shale, light to medium greenish-gray, silty, 80%; shale, black, 20%; trace pyrite
- 265 - TD

Remarks

1. Driller says, "Flowing oil as much as Gray #4. Gas is hard to compare as it came in higher stratigraphically. Gas has rotten smell (H₂S)".
2. The drill hole was standard rotaried with water, no additives. The interval 167-207' was cored and sent for basic analysis to Oil Field Research, Chanute.
3. Circulation time in lower part of hole averaged 3 minutes (a 3 ft. time lag).
4. The oil-bearing sand, including shale and siltstone lenses, is 74' thick (168 to 242').
5. A strip log is attached which compares five types of logs of Hiller #1 with each other:
 - a. ZHT composite (5' interval) sample log.
 - b. ZHT spot sample log.
 - c. Driller's log.
 - d. Geolograph log.
 - e. Gamma ray-neutron log.
6. The well has been perforated at 168.7' to 176.5' and fractured.
7. *Water salinity of oil sand = 13,500 ppm*