



COAL LABS

Englewood, Colorado
1-800-853-5113
FAX 303-617-8956

FORMATION EVALUATION LOG

SCALE: 1:240 (1"=20', 5" = 100')

COMPANY: Heartland Oil and Gas, Inc
WELL: Renyer 14-12
FIELD: Wildcat
COUNTY: Nemaha **STATE:** KS

API #: 15-131-20181-00-00
LOCATION: nw se se sw
810 fsl 3150 fel
Sec 12 Twp 3S Rge 14E

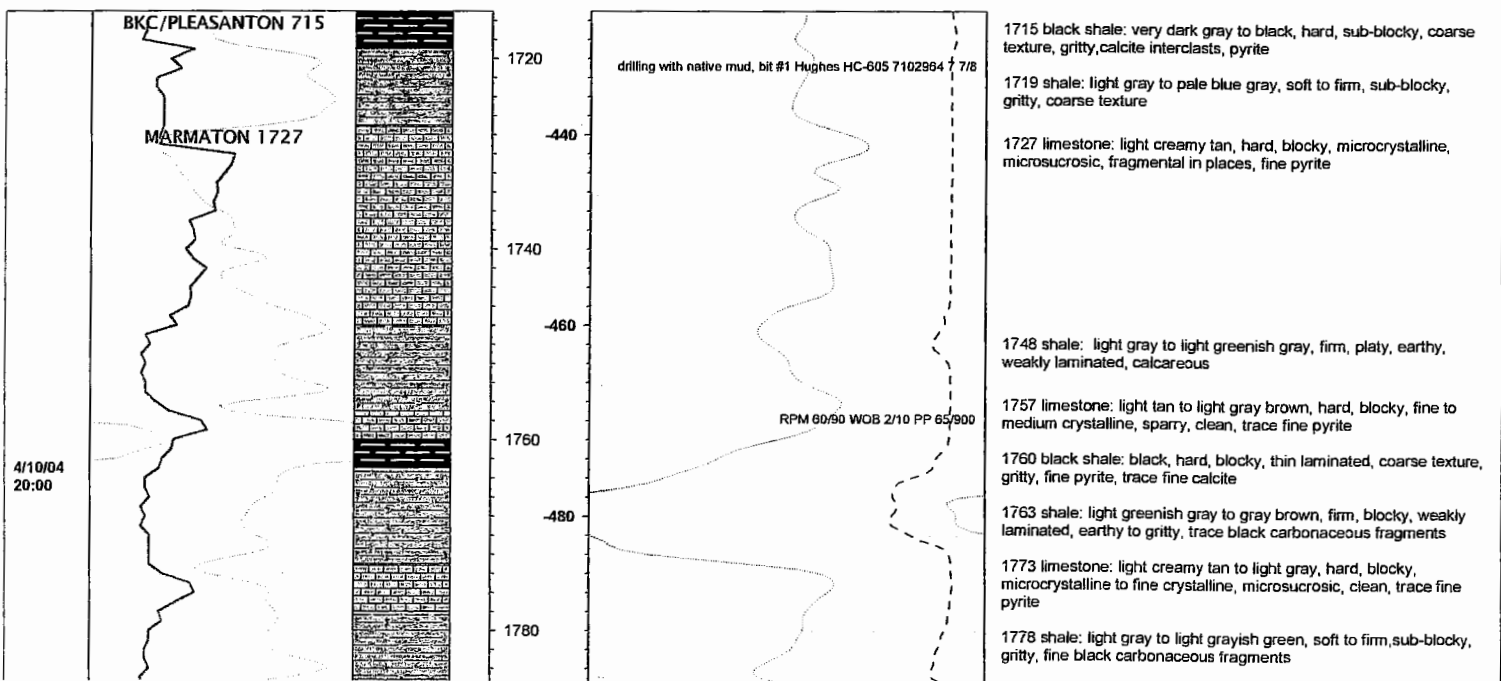
ELEV GL: 1279
ELEV KB: 1288
Log Measured from: KB

Spud Date	April 9, 2004
Surface Casing	12 1/2" to 265
Hole Size	7 7/8
Total Depth	2720 ft
Logging Dates	April 10 - 12, 2004
Interval Logged	1715 - 2720 ft
Drilling Fluid	native mud, bentonite gel
Mud Pumps	Skytop-Brewster 6x14
Drilling Contractor	Gulick Drilling, Inc. RECEIVED
Rig Pusher	Ron Gulick KANSAS CORPORATION COMMISSION
Company Geologist	Bill Hayworth SEP 29 2004
Company Engineer	Layle Robb CONSERVATION DIVISION
Logging Geologist	Chris Ryan WICHITA, KS

LEGEND

	LIMESTONE		BRECCIA		FOSSILS
	SHALE		SILTY SHALE		
	SAND		BLACK SHALE		GLAUCONITE
	DOLOMITE		COAL		
	OOLITIC LIMESTONE		CHERT		PYRITE
	LIMEY SHALE		SILTSTONE		
	SANDY SILT		CLAY		BENTONITE

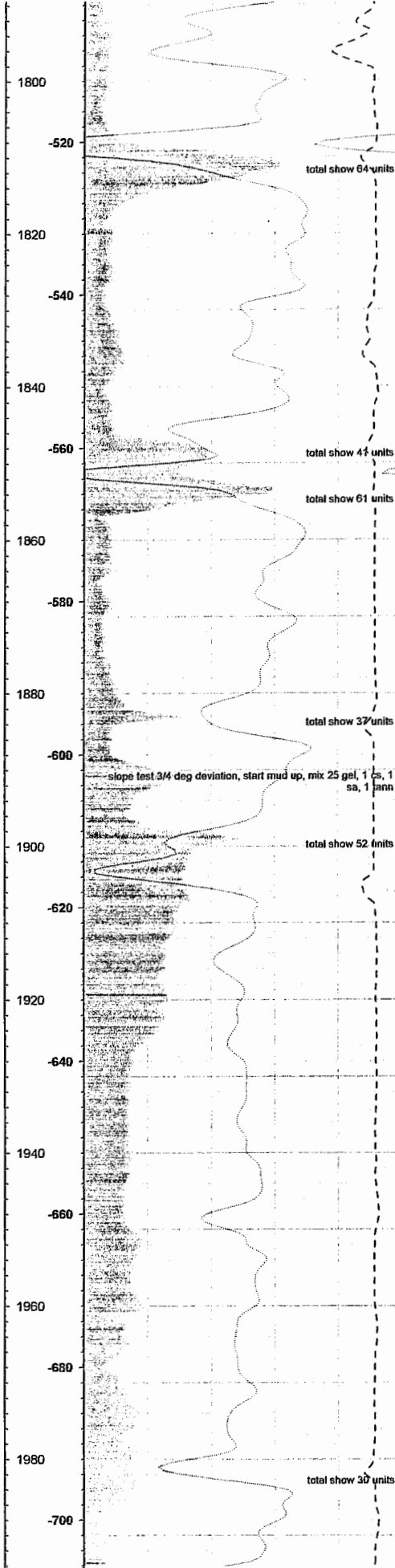
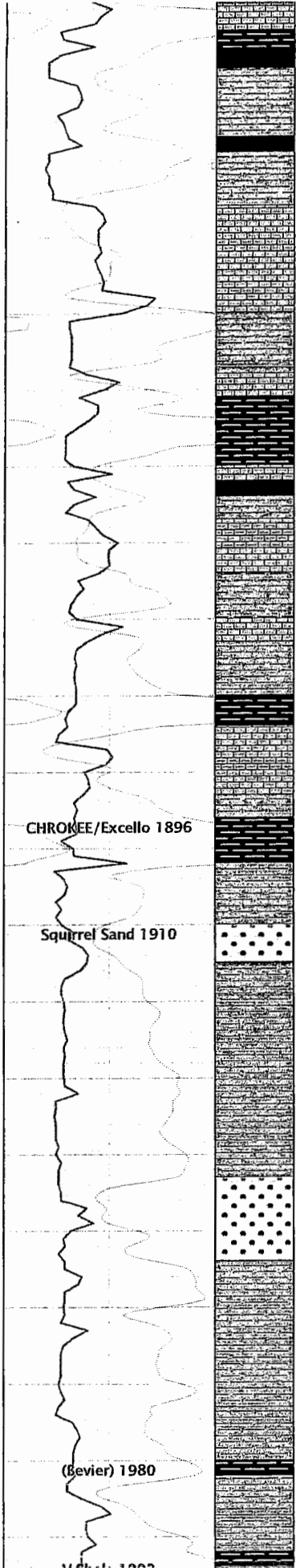
DATE/TIME	PEN. RATE (MIN/FT)	LITHOLOGY	CORE	DEPTH (FT)	ELEVATION (FT)	TOTAL GAS (UNITS)	LITHOLOGIC DESCRIPTION
	GAMMA RAY (API UNITS)					BULK DENSITY (g/cc)	
	0.1 ————— 10					0 ————— 100	
	0 ————— 150					2 ————— 3	
						16 ————— 8	



21:00

22:00

23:00



cryptocrystalline, light, fragmental in places, trace fine pyrite

1793 black shale: black, hard, blocky, massive to weakly laminated, earthy, medium texture, abundant coarse calcite

1796 coal: black, hard, blocky, thin laminated, velvety luster, fine calcite, abundant pyrite

1798 shale: dark grayish green, firm, blocky, massive, earthy, trace fine pyrite

1807 coal: black, hard, blocky, thin laminated, velvety luster, abundant calcite, fine pyrite

1809 shale: dark grayish green, firm, blocky, massive, earthy, trace fine pyrite

1816 limestone: white to light creamy tan, hard, platy, microcrystalline, microsucrosic, clean, trace very fine pyrite

1830 shale: light gray to greenish gray, firm, platy, well laminated, fine texture, earthy

1838 limestone: light tan to brown, mottled, hard, blocky, microcrystalline, sparry, fragmental fine pyrite

1841 black shale: very dark gray to black, hard, blocky, massive, gritty, fine calcite, trace pyrite

1852 coal: black, hard, blocky, thin laminated, velvety luster, occasional fine calcite, fine pyrite

1854 shale: light gray to light greenish gray, soft to firm, blocky, gritty, fine black carbonaceous fragments, trace pyrite

1857 limestone: dark gray brown to brown, mottled, hard, blocky, medium to coarse crystalline, fragmental, coarse skeletal fragments, crinoids, gastropods, sparry in places

1864 shale: light gray to lightgreenish gray, soft to firm, blocky, gritty, fine black carbonaceous fragments, trace pyrite

1873 shale: dark grayish green, firm, platy, earthy, fine texture, calcareous in places

1880 black shale: black, hard, blocky, very thin laminated, gritty, coarse texture, fine lamellar pyrite, trace calcite

1884 limestone: white to light creamy gray, hard, platy, microcrystalline, microsucrosic, clean, trace fine pyrite

1893 shale: dark grayish green, firm, blocky, massive, earthy, trace fine pyrite

1896 black shale: black, hard, blocky, massive, gritty, fine to medium texture, fine calcite, trace pyrite

1902 shale: light grayish green, firm, platy, earthy to gritty, medium texture, calcareous

1910 sandstone: white to light gray to gray brown, fine to medium grained, subrounded, moderately sorted, thin bedded, silty, abundant lithic fragments, shale fillings, micaceous, no porosity

1915 shale: light grayish green, firm, platy, earthy to gritty, medium texture, calcareous

1943 sandstone: white to clear, coarse grained, subrounded to subangular, moderately sorted, clean, fine disseminated pyrite, weakly friable, well cemented, trace pinpoint porosity

1954 shale: light gray to pale grayish green, soft to firm, gritty, sandy, coarse texture, clay fillings, calcareous

1973 shale: pale green to pale grayish green, soft, clay rich, gummy, black carbonaceous fragments

1980 black shale: black, hard, platy, thin laminated, earthy, fine texture, fine calcite

1982 shale: light gray to pale grayish green, soft to firm, platy, gritty, sandy, medium texture, clay rich in places

1989 black shale: black hard platy thin laminated earthy fine

4/11/04

01:00

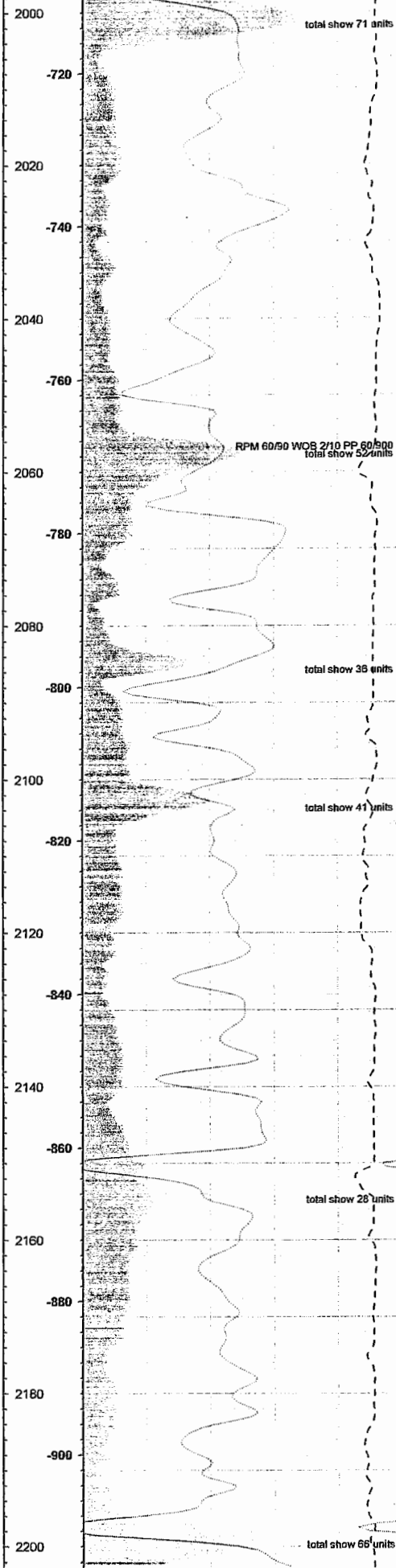
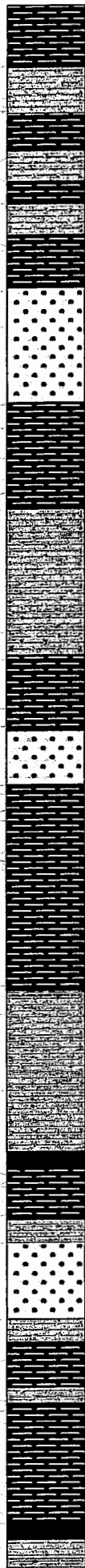
Chelsea Sand 2035

Tebo 2050

Tebo B-2100

Abj Coal 2148

Ebj coal 2197



2006 shale: light gray to light gray brown to light grayish green, soft, sub-platy, gritty, medium texture, clay fillings, calcareous

2012 black shale: black, hard to firm, subplaty, flaky, fine texture, well laminated, abundant fine pyrite, calcite

2017 shale: light gray to pale blue-green, soft, subplaty, gritty, coarse texture, slightly calcareous

2021 black shale: very dark gray to black, firm, platy, well laminated, earthy, fine texture, trace pyrite

2024 shale: light gray to pale blue gray, soft, gritty, sandy, medium texture, clay fillings

2028 black shale: black, hard to firm, subplaty, earthy, well laminated, abundant pyrite

2035 sandstone: white to light gray, hard, fine grained, subangular, well sorted, clean, tight, trace pyrite

2050 black shale: black, hard to firm, platy, earthy to woody, well laminated, abundant fine pyrite

2064 shale: light gray brown, firm, platy, gritty, sandy, medium texture, weakly laminated

2083 black shale: black, hard, subplaty, earthy, well laminated, medium texture, fine calcite, pyrite laminations

2093 sandstone: white to very light gray, medium grained, subrounded, well sorted, weakly friable, shale fillings in places, trace fine pyrite

2100 black shale: black, hard to firm, platy, well laminated, earthy, fine texture, fine pyrite laminations

2127 shale: varicolored, light greenish gray to light gray brown to dark red, soft to firm, sub-blocky, earthy to gummy, clay fillings

2148 coal: black, hard, blocky, subvitreous, velvety, well laminated, occasional interclasts, fine pyrite

2150 black shale: black, hard, subplaty, well laminated, fine texture, earthy, abundant pyrite

2157 shale: light grayish green to gray, firm, subplaty, weakly laminated, gritty, black carbonaceous fragments

2160 sandstone: white to light tan, medium grained, subrounded, well sorted, weakly friable, shale fillings in places, trace fine pyrite

2170 shale: varicolored, light greenish gray to light gray brown to dark red, soft to firm, sub-blocky, earthy to gummy, clay fillings

2173 black shale: black, hard, platy, well laminated, fine texture, earthy, abundant pyrite laminations

2197 coal: black, hard, blocky, subvitreous, velvety luster, well laminated, poorly cleated, abundant pyrite, fine calcite

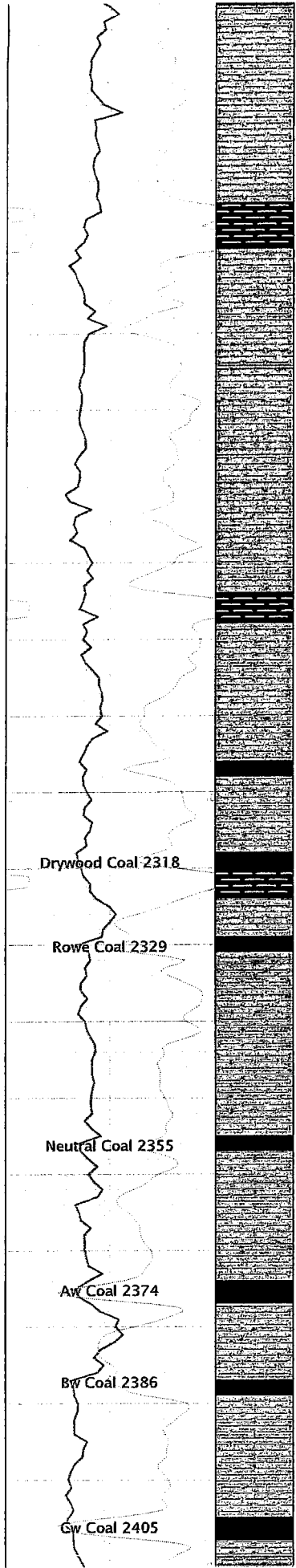
2199 shale: light grayish green to gray, soft to firm, subplaty, weakly laminated, gritty, coarse texture, clay fillings, black

02:00

03:00

04:00

05:00



Drywood Coal 2318

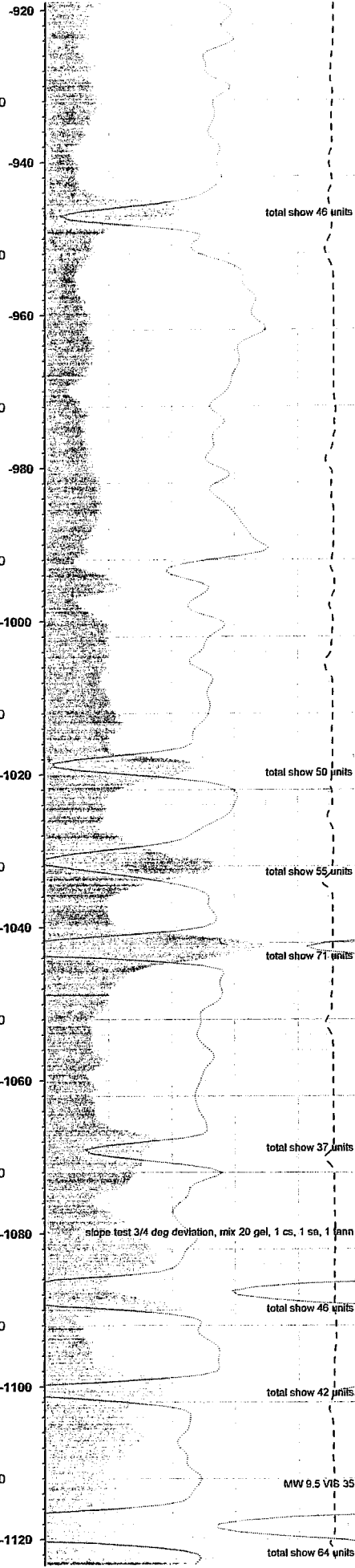
Rowe Coal 2329

Neutral Coal 2355

Aw Coal 2374

Bw Coal 2386

Cw Coal 2405



total show 46 units

2233 black shale: black, hard to firm, platy, well laminated, earthy, fine texture, fine calcite, pyrite laminations

2239 shale: dark gray to dark grayish green, firm, platy, well laminated, earthy, fine texture, calcareous

2266 shale: dark green to grayish green, firm, platy, fine texture, earthy to waxy, calcareous

2284 black shale: black, hard to firm, platy, well laminated, earthy, fine texture, fine calcite, pyrite laminations

2288 shale: dark grayish green, hard to firm, sub-blocky, coarse texture, gritty, very calcareous

total show 50 units

2306 coal: black, hard, blocky, subvitreous to vitreous, fine laminated, moderately cleated, fine pyrite, calcite

2308 shale: dark grayish green, sub-blocky, soft to firm, clay rich, earthy to gummy, weakly laminated, abundant black carbonaceous fragments

total show 55 units

2318 coal: black, blocky, subvitreous, bright velvety luster, thin laminated, poorly developed cleats, fine pyrite in laminations and fractures

2320 black shale: black, hard, platy, thin laminated, fine texture, earthy, abundant pyrite

total show 71 units

2324 shale: pale green to dark grayish green, sub-blocky, soft to firm, clay rich, earthy to gummy, weakly laminated, abundant black carbonaceous fragments

2329 coal: black, blocky, subvitreous, velvety luster, thin laminated, poorly cleated, fine pyrite in laminations and fractures, fine calcite

2331 shale: dark gray to dark greenish gray, subplaty, hard to firm, earthy to gritty, coarse texture, weakly laminated, calcareous

total show 37 units

2355 coal: black, blocky, subvitreous, dull velvety luster, low reflectance, weakly laminated, very abundant fine to medium disseminated pyrite

2357 shale: pale grayish green, firm, subplaty, earthy to gritty, calcareous, coarse texture

slope test 3/4 deg deviation, mix 20 gel, 1 cs, 1 sa, 1 ann

total show 46 units

2374 coal: black, blocky, subvitreous, dull velvety luster, bony, abundant coarse calcite, pyrite interclasts

2377 shale: light gray to gray brown, firm, platy, gritty, medium texture, calcareous, black carbonaceous fragments

total show 42 units

2387 coal: very dark gray to black, soft, blocky, bituminous, low reflectance, shaly, trace fine pyrite, calcite

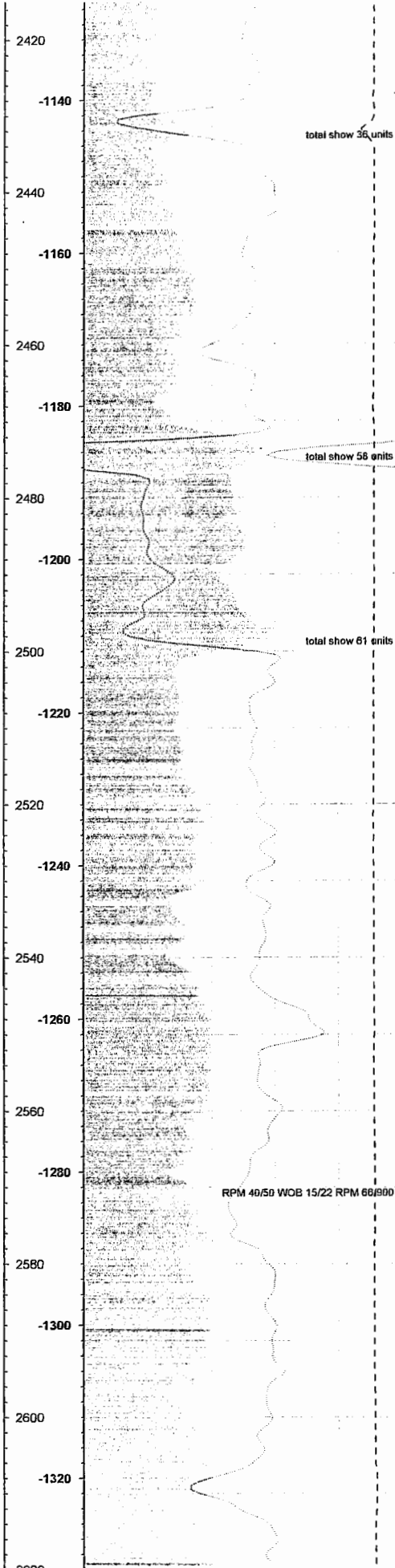
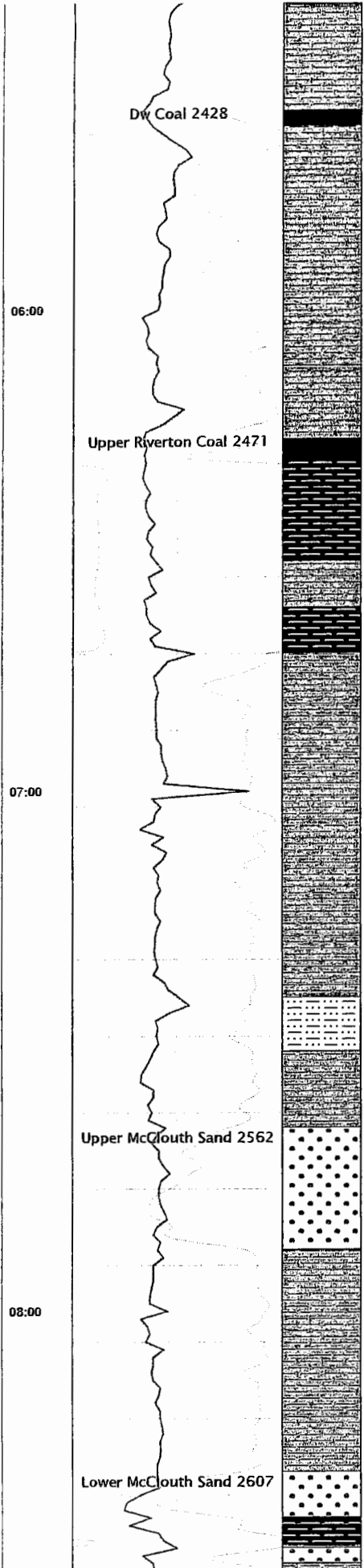
2389 shale: dark grayish green to gray brown, firm, platy, waxy, calcareous

MW 9.5 V16 35

total show 64 units

2405 coal: black, hard, blocky, subvitreous, velvety luster, weakly laminated, shaly, abundant calcite interclasts, fine pyrite

2408 shale: dark gray to grayish green to light gray brown, firm,



2429 coal: black, hard, blocky, subvitreous, dull velvety luster, weakly laminated, shaly, abundant calcite interclasts, fine pyrite

2431 shale: dark gray, firm, platy, earthy to waxy, fine texture

2472 coal: black, blocky, bituminous, very low reflectance, bony, abundant calcite interclasts, very poor cleating, fine pyrite

2475 black shale: black, hard, platy, thin laminated, fine texture, earthy, abundant pyrite

2500 shale: dark greenish gray to dark gray, firm, platy, splintery, well laminated, fine texture, calcareous

2517 shale: pale green, soft, sub-blocky, gritty, medium texture, calcareous

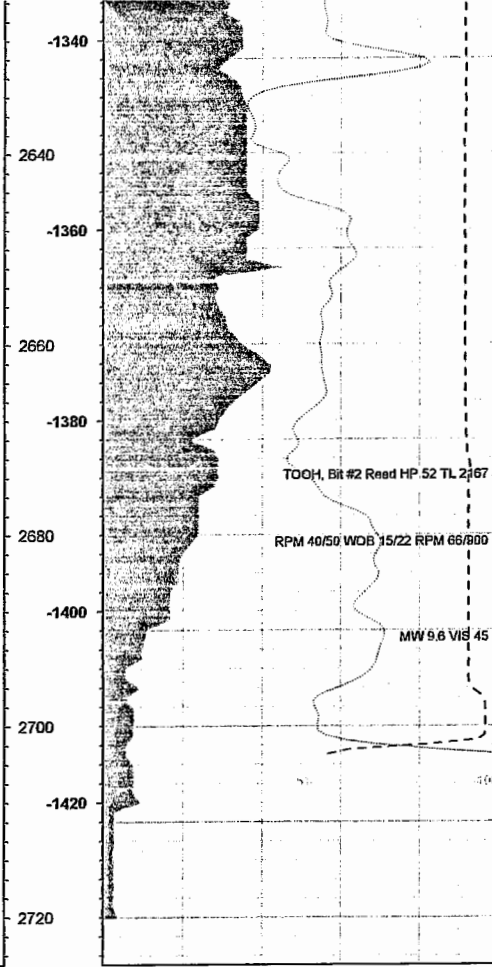
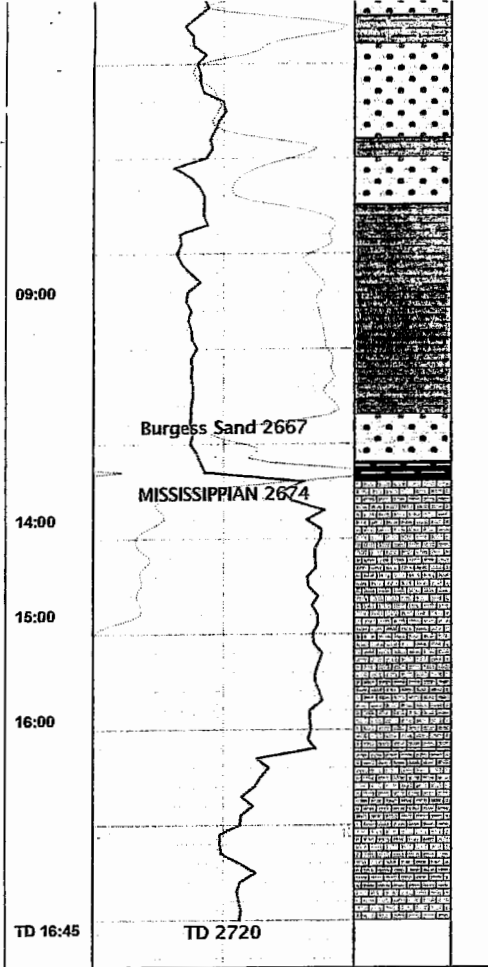
2545 siltstone: light tan to light gray, hard, blocky, fine grained, shale fillings, well indurated, trace pyrite

2552 shale: light greenish gray to dark gray, firm, platy, splintery, fine texture, slightly carbonaceous in places, calcareous

2562 sandstone: light gray to gray brown, fine to medium grained, subrounded, moderately sorted, thin bedded, micaceous, fine lithic fragments, trace intergranular porosity

2578 shale: light greenish gray to dark gray, firm, platy, splintery, fine texture, slightly carbonaceous in places, calcareous

2607 sandstone: white to light tan, fine to medium grained, subrounded, moderately well sorted, fining upwards, thin bedded, abundant lithic fragments, black carbonaceous fragments, fine pyrite, interbedded dark gray to black hard platy shale



2645 shale: light greenish gray to dark gray, firm, platy, splintery, fine texture, slightly carbonaceous in places, calcareous

2667 sandstone: light gray to light gray brown, medium grained, subrounded, moderately sorted, micaceous, thin bedded, trace intergranular porosity

2672 black shale: black, hard, platy, splintery, fine texture, well laminated, fine pyrite

2674 limestone: white, hard, platy to blocky, cryptocrystalline, very clean, tight, translucent white chert

2702 limestone: white to light honey yellow, hard, blocky, cryptocrystalline, to microcrystalline, microscrossitic, clean, occasional fine pyrite