

ATOKA

COAL LABS

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

FORMATION EVALUATION LOG

SCALE: 1:120 (1"=10', 2.5" = 100')

COMPANY: Heartland Oil and Gas, Inc
WELL: Atwater 7-15
FIELD: Wildcat
COUNTY: Jackson **STATE:** KS

API #: 15-085-20075-00-00
LOCATION: nw sw ne
3420 fsl 2130 fel
Sec 15 Twp 5S Rge 15E

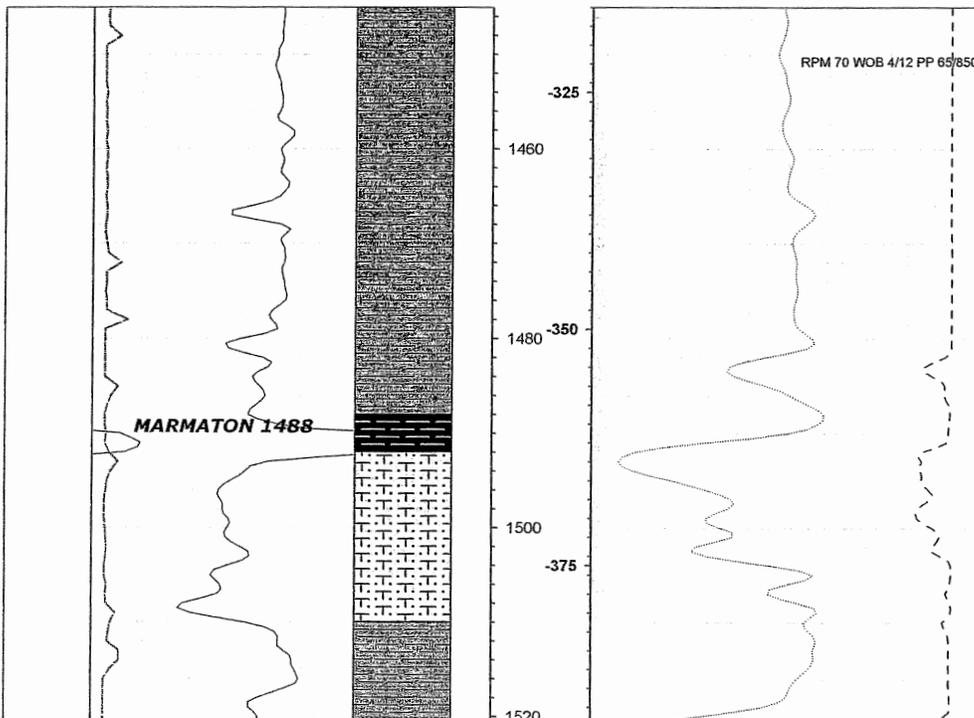
ELEV GL: 1107 ft
ELEV KB: 1115 ft
Log Measured from: KB

Spud Date	June 6, 2004
Surface Casing	8 5/8" 0 - 243 ft
Hole Size	7 7/8
Total Depth	2404 ft
Logging Dates	June 8 - 10, 2004
Interval Logged	1400 - 2404 ft
Drilling Fluid	native mud, bentonite gel
Mud Pumps	Skytop-Brewster 6x14
Drilling Contractor	Gulick Drilling, Inc.
Rig Pusher	Ron Gulick
Company Geologist	Bill Hayworth
Company Engineer	Layle Robb
Logging Geologist	Chris Ryan

LEGEND

	LIMESTONE		BRECCIA		FOSSILS
	SHALE		SILTY SHALE		
	SAND		BLACK SHALE		GLAUCONITE
	DOLOMITE		COAL		
	OOOLITIC 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)	
						Caliper (in)	



1445 shale: light gray to pale greenish gray, soft to firm, well laminated, fine to medium texture, earthy to waxy, trace fine pyrite

RECEIVED
KANSAS CORPORATION COMMISSION

SEP 29 2004

CONSERVATION DIVISION
WICHITA, KS

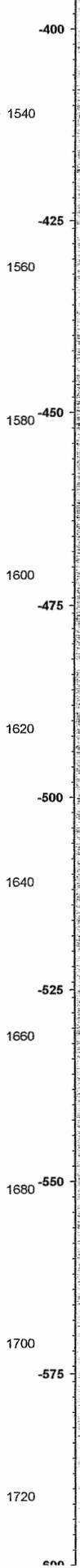
1488 black shale: black, firm, subplaty, weakly laminated, medium texture, gritty, fine calcite interclasts

1492 silty sand: white to light gray, very fine grained to fine grained, well rounded, well sorted, weakly friable, hard, clean, trace fine pyrite, fine black carbonaceous fragments

1510 shale: light gray to light greenish gray to gray brown, soft to firm, coarse texture, gritty, sandy, trace pyrite

Fort Scott Lime 1606

**CHEROKEE/Excelsior
1640**



- 1528 black shale: black, hard to firm, blocky, weakly laminated, coarse texture, earthy to gritty, calcareous, abundant coarse calcite interclasts, trace pyrite
- 1532 limestone: white to light creamy tan, hard, blocky, cryptocrystalline, tight, clean, trace fine pyrite
- 1538 shale: pale creamy green to light greenish gray, soft to firm, sub-blocky, weakly laminated, earthy to waxy, calcareous, trace fine pyrite
- 1542 coal: black, hard to firm, blocky, dull luster, thin laminated, clean, trace fine pyrite, trace calcite
- 1544 shale: light gray, soft to firm, weakly laminated, coarse texture, gritty, clay rich
- 1562 shale: pale creamy green, firm, sub-blocky, weakly laminated, coarse texture, gritty, sandy, calcareous, trace fine pyrite
- 1584 black shale: black, firm, sub-platy, well laminated, flaky, medium to coarse texture, bony, abundant coarse calcite interclasts, scattered pyrite
- 1588 shale: pale creamy green to light gray, soft to firm, sub-blocky, weakly laminated, fine to medium texture, gritty, calcareous, scattered pyrite
- 1606 limestone: white to light creamy tan, mottled, hard, blocky, fine crystalline, fragmental, stylolitic, tight, trace fine pyrite
- 1616 shale: pale creamy green to light greenish gray, soft to firm, sub-blocky, weakly laminated, earthy to waxy, calcareous, trace fine pyrite
- 1622 black shale: black, hard to firm, platy, fine texture, earthy, well laminated, trace fine pyrite
- 1628 limestone: light honey yellow, hard, blocky, cryptocrystalline, tight, clean, trace fine pyrite
- 1640 black shale: very dark gray to black, soft to firm, sub-blocky, weakly laminated, coarse texture, gritty, sandy, scattered pyrite
- 1646 shale: light gray to light grayish green to light gray brown, soft to firm, weakly laminated, fine texture, silty, weakly calcareous
- 1716 sandstone: white to clear, coarse grained, subangular, well sorted, hard, weakly friable, clean, trace black carbonaceous fragments, trace fine pyrite
- 1720 shale: light gray to light gray brown, soft, sub-blocky, fine to medium texture, weakly laminated, earthy to silty, clay rich in places, weakly calcareous

V Shale 1740

1740

1740 black shale: black, firm, subplaty, weakly laminated, fine texture, earthy, trace pyrite, trace calcite

-625

1746 shale: light gray to light brown, firm, sub-blocky, fine to medium texture, earthy to gritty, sandy in places, trace black carbonaceous fragments

1760

1780

-650

1800

-675

1812 sandstone: white, medium grained, subrounded, well sorted, clean, soft, friable, scattered fine pyrite, trace fine black carbonaceous fragments, trace intergranular porosity

1820

1822 shale: light creamy gray to light gray brown, soft to firm, weakly laminated, earthy to gritty, fine to medium texture, silty in places, weakly calcareous

-700

Tebo 1838

1840

1838 black shale: black, firm, sub-blocky, weakly laminated, fine to medium texture, earthy, clean, trace fine pyrite

-725

mix 60 gel 2 cs 2 sa 2 tann 1 drispac

1848 limestone: white to light honey yellow, hard, blocky, cryptocrystalline to microcrystalline, fragmental in places, coarse skeletal fragments, scattered fine pyrite

1860

1856 black shale: black, hard to firm, weakly laminated, fine texture, earthy, clean, trace pyrite

1860 shale: light gray to pale creamy green, soft to firm, sub-blocky, fine texture, weakly laminated, earthy to gritty, calcareous, trace pyrite

1880

-750

Weir Pittsburg 1906

1900

TOOH, trip in Corion pipe and tools, core run #1: 1900-1924, recover 28/24

1900 shale: very dark gray to black, hard, platy, weakly laminated to massive, fine texture, earthy, clean, very occasional fine pyrite bands, weakly calcareous

-775

1906 coal: black, hard to firm, blocky to flaky, dull luster, thin laminated, shaly, well cleated, fine pyrite bands, abundant calcite in cleats and fractures, spotty visible gas bleeding

1920

1907 shale: light gray, firm, platy, splintery, fine texture, weakly laminated, earthy to waxy, gritty in places, weakly calcareous, trace fine pyrite

1910 shale: dark greenish gray, hard to firm, platy, splintery, thin laminated, fine texture, waxy, calcareous, trace pyrite

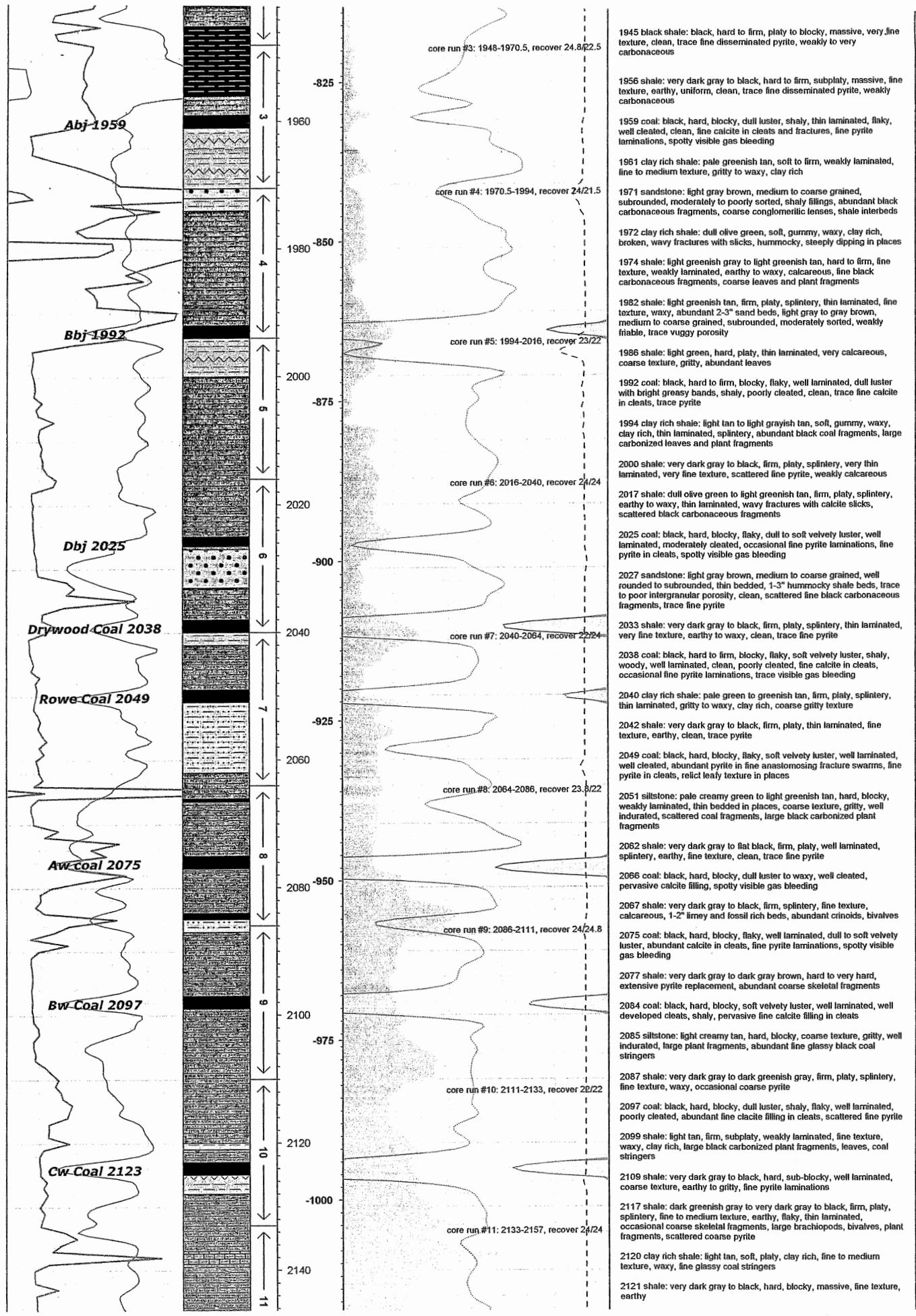
-800

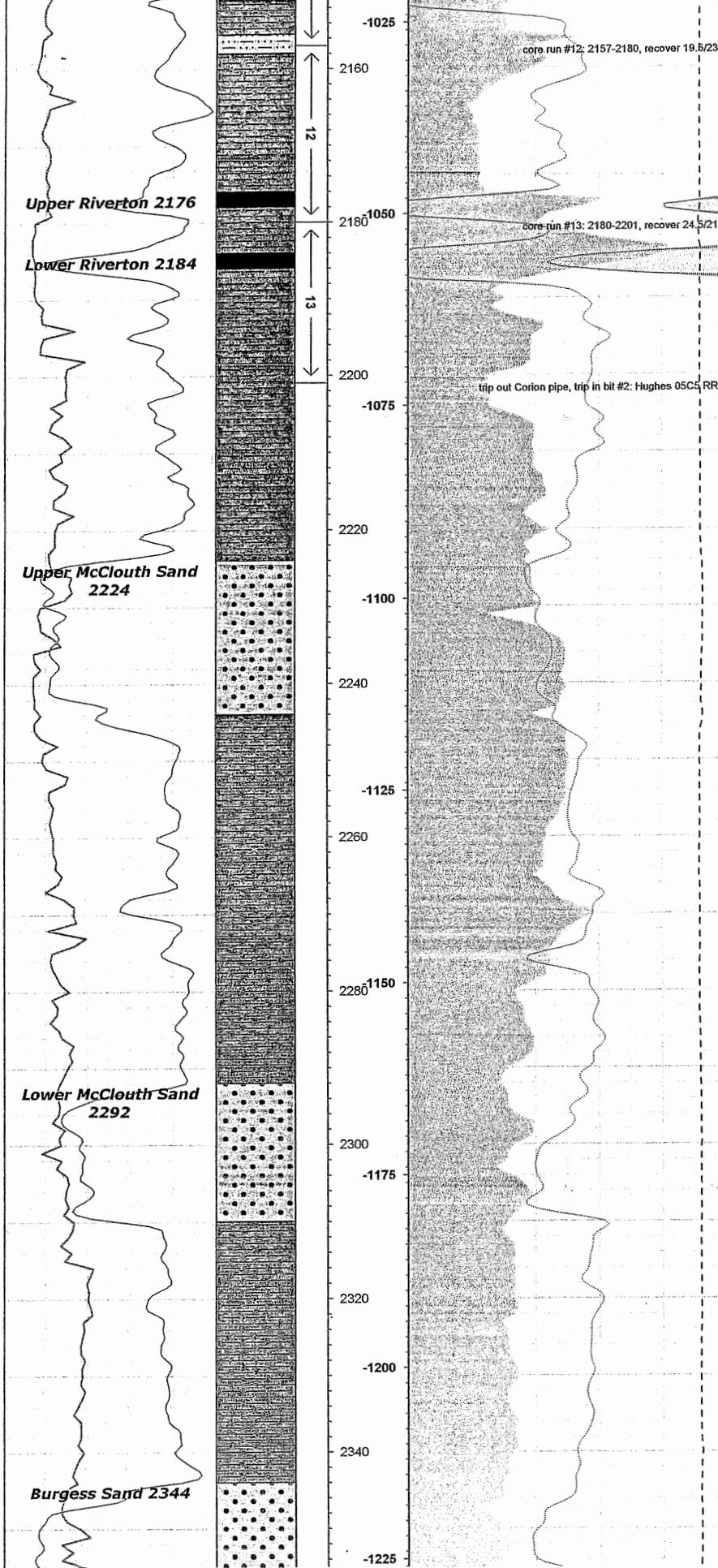
core run #2: 1924-1948, recover 21 6/24

1915 shale: dark greenish gray to dark gray brown, soft to firm, platy, splintery, well laminated, fine texture, waxy, calcareous, irregular limy beds and lenses, bioturbated, hummocky laminations

1919 silty shale: light gray to light gray brown to light tan, firm, platy, well laminated, thin bedded, hummocky, light tan to light brown fine to medium silt beds

1923 shale: light gray to dark gray, soft to firm, platy, splintery, thin





2125 clay rich shale: light tan, soft, subplaty, thin laminated, clay rich, waxy, gritty in places, coarse texture, scattered coal stringers, coarse black carbonized plant fragments

2128 shale: very dark gray to black, hard to firm, platy, fine texture, earthy to waxy, trace fine pyrite

2137 limestone: light brown to dark brown, hard, blocky, cryptocrystalline, micritic, bioturbated at upper margin, grading to skeletal grainstone at base, very abundant crinoid stalks, small bivalves, interfingering lower margin

2139 shale: very dark gray to flat black, firm, plat, splintery, thin laminated, fine texture, earthy to waxy, uniform, trace fine pyrite

2156 siltstone: olive green to gray brown, hard, blocky, coarse texture, well indurated, gritty, abundant coarse plant fragments

2158 shale: very dark gray to flat black, firm, platy, splintery, fine texture, earthy, uniform, occasional fine skeletal fragments, trace fine pyrite

2176 coal: black, hard, blocky, dull luster, well laminated, occasional bright greasy bands, flaky, shaly in places, well cleated, abundant calcite in cleats, fine pyrite laminations, spotty visible gas

2178 shale: very dark gray to flat black, firm, platy, splintery, fine texture, earthy, uniform, occasional fine skeletal fragments, trace fine pyrite

2184 coal: black, hard, blocky, soft velvety luster, well laminated, bright greasy bands, flaky, shaly in places, well cleated, broken, fine calcite in cleats, occasional pyrite laminations, abundant visible gas bleeding

2186 shale: dark gray to dark greenish gray, firm, platy, medium texture, earthy to gritty, weakly calcareous, occasional coarse pyrite clusters

2224 sandstone: white to clear to light yellow, coarse grained, subrounded, well sorted, hard friable, poorly consolidated, loose coarse quartz grains, shaly fillings in places, scattered fine pyrite, trace to poor intergranular porosity

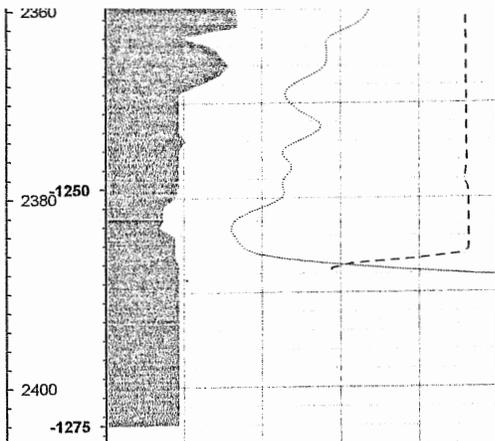
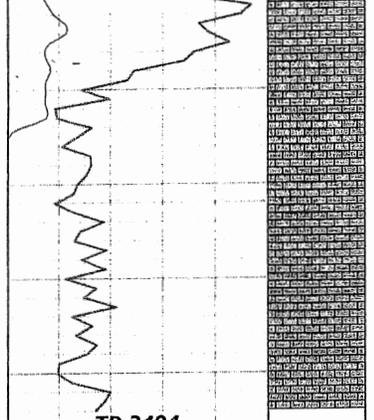
2244 shale: dark gray to dark greenish gray, firm, platy, medium texture, earthy to gritty, weakly calcareous, occasional coarse pyrite clusters

2292 sandstone: white to clear, fine to medium grained, subrounded, moderately sorted, abundant lithic fragments, fine black carbonaceous fragments, scattered fine pyrite

2310 shale: dark gray, firm, sub-platy, weakly laminated, gritty, coarse texture, weakly calcareous, trace fine pyrite

2344 sandstone: white to clear to light yellow, coarse grained, subrounded, well sorted, hard friable, poorly consolidated, loose coarse quartz grains, shaly fillings in places, scattered fine pyrite, trace to poor intergranular porosity

MISSISSIPPIAN 4330



scattered fine pyrite

2388 limestone: light yellow to light brown, hard, blocky, microcrystalline, sacrosic, clean, poor to fair intercrystalline porosity, scattered vuggy porosity, trace fine pyrite