

limestone, mixed non-descript fossiliferous, dense - abundant light gray arenaceous, pyritic, scattered chert and chalk, no shows

**Stark Shale 4606 -1783**  
shale, black carbonaceous

shale, gray, silty to limey, pyritic

limestone, gray to light gray, cryptocrystalline, dense, arenaceous to lithographic, some fossiliferous, trace pyritic, no shows

shale, black carbonaceous

limestone, light gray, oolitic to bioclastic, dense with some small solution vugs, some chalk, no shows

limestone, gray, dolomitic, fossiliferous, microcrystalline, dense

limestone, black to dark gray, cryptocrystalline, dense with black and gray shales, mostly dense and limey

limestone, gray, mottled, pelletal to oolitic/bioclastic, chalky to weathered, influx chalk, poor visible porosity, no shows

grading to: limestone, gray, mottled, pelletal to fossiliferous, dense, trace pyritic

limestone, dark gray to black, slightly fossiliferous, argillaceous, dense cherty, with dark gray argillaceous limey shale, streaks limestone as above

shale, gray to dark gray and black, soft and silty to dense and limey

**Marmaton 4747 -1924**  
limestone, cream to gray and tan, microcrystalline, fossiliferous, trace oolitic, chalky to dense mix, with cream limestone, smooth compact lithographic, poor overall visible porosity, no shows, abundant chalk

limestone, cream, microcrystalline, fossiliferous to spiculitic, with limestone, cream, cryptocrystalline, dense, lithographic, no shows

limestone, cream to light gray, microcrystalline, fossiliferous, dense, oolitic to pelletal, grainy, abundant chalk, poor visible porosity, no shows

as above, grading to white and cream bioclastic

limestone, mixed fossiliferous, with flood shale, green, brown, black carbonaceous

black carbonaceous shale

**Pawnee 4840 -2017**  
limestone, white to cream, cryptocrystalline, chalky fossiliferous to bioclastic, poor visible porosity, abundant chalk, scattered weathered cherts, fossiliferous, slight fluorescence, no shows

limestone, gray to cream, microcrystalline, fossiliferous to pelletal, grainy, poor overall porosity, some chalk, no shows

**Cherokee 4886 -2063**  
limestone, mixed gray to cream and tan, chalky, fossiliferous, abundant gray and black shales, with chert, fossiliferous (bryozoans) to gray smokey, no shows

grading to gray/brown limestones, fossiliferous to pelletal and oolitic, chalky to cherty, some chalk, shales, green to gray and black, limey to silty

limestone, mixed gray to tan, fossiliferous, crypto-microcrystalline, fossiliferous to lithographic, with appx 50% shales, black to gray, limey to argillaceous and silty, some fossiliferous, trace chert, no show or fluorescence

limestone, light gray to gray and cream, fossiliferous to arenaceous, some very dolomitic and grainy, marked decrease in shales, no shows or fluorescence

limestone, gray to brown and tan, cryptocrystalline, fossiliferous, dense, cherty, with limestone as above, dark gray shales, some pyrite nodules, no shows or fluorescence

limestone, mixed tan to gray fossiliferous, chalky to dense, fossiliferous, crypto-microcrystalline, no shows

as above

limestone, gray to tan, microcrystalline, dense cherty to chalky, some bryozoan frags, with chert, brown to gray translucent, fossiliferous, bryozoans, no shows

limestone, brown to gray, cryptocrystalline, fossiliferous, cherty, dense, with limestone, dark gray to black, microcrystalline, lithographic, cherty and dense, no shows, influx dark green to gray grainy fossiliferous shale

5080 sample, limestone as above with light to bright green shales, silty, some soft, mushy, some dark green siltstone - 5090 sample, green shale drops out, limestone, dark gray, fossiliferous to lithographic, dense, with limestone, gray mottled, fossiliferous, sandy, glauconitic, dense to chalky, one piece with dead brown stain, no show free oil, no odor or fluorescence

**INOLA** limestone, brown to gray, micro-cryptocrystalline, slightly fossiliferous, some small vugs and fractures, fair odor, slowly bleeding heavy free oil, fair show free oil in tray, no fluorescence, excellent cut

**Morrow Sand 5091 -2268**  
sandstone, quartz, pale green with spotty stain to brown saturated stain, very fine grain, rounded to well rounded, well cemented, fair sorting, slight show free oil, fair odor, no fluorescence, good cut

grades to shale, gray, soft, silty, heavy gray wash, some sandstone stringers as above with slight staining

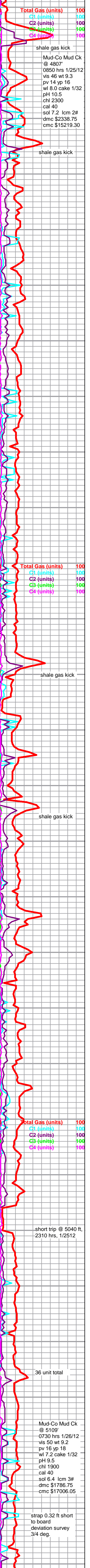
a.a., some pyrite nodules, some clusters fine to med. grain sandstone, shaley, friable, barren

sandstone, mixed, very fine to medium grain, rounded to angular, poorly sorted, mostly well cemented, some very pyritic, barren, with: brown fossiliferous sandy limestone, abundant chalk

**Mississippian 5137 -2314**  
limestone, brown to cream, crypto-microcrystalline, fossiliferous to lithographic, with green cryptocrystalline lithographic, abundant soft green shale, scattered chert

as above, with (5160 sample) abundant light gray and green shales, pelletal in part, some white sandy limestone to very fine grain homogeneous limey sandstone

limestone, white to pale green, very sandy, to very fine grained sandstone, well cemented, overall barren to spotty to sat. brn-blk-ory



Mud-Co Mud Ck @ 4807' 0850 hrs 1/25/12 vis 46 wt 9.3 pv 14 yp 16 wl 8.0 cake 1/32 pH 10.5 chl 2300 cal 40 sol 7.2 lcm 2# dmc \$2338.75 cmc \$15219.30

Mud-Co Mud Ck @ 5109' 0730 hrs 1/26/12 vis 50 wt 9.2 pv 16 yp 18 wl 7.2 cake 1/32 pH 9.5 chl 1900 cal 40 sol 6.4 lcm 3# dmc \$1786.75 cmc \$17006.05

strap 0.32 ft short to board deviation survey 3/4 deg.

