

## Stark Shale 4062 -1291

shale, black carbonaceous

limestone, white to cream, cryptocrystalline, fossiliferous, grainy, chalky, poor visible porosity, abundant chalk, with: limestone, light brown, cryptocrystalline, dense fossiliferous, no shows

limestone, a.a., brown limestone dropping out, still abundant chalk

shale, black carbonaceous

limestone, cream to gray, crypto-microcrystalline, fossiliferous, chalky in part, with dense dark gray limestone, fossiliferous, poor visible porosity, chert, smokey gray, fossilifeorus, no shows, moderate chalk in samples

as above with some cherty weathered mottled limestone

## Base KC 4139 -1368

limestone, variable gray and cream, mottled and fossiliferous, flood chalk, no shows

black and gray shales

limestone, variable gray, some mottled, micro-cryptocrystalline, fossiliferous to pelletal, some weathered, with gray compact lithographic, abundant chalk in samples, some scattered gray chert, no shows

red and gray shales, abundant soft orange siltstone

## Marmaton 4204 -1433

limestone, white to cream and gray, some mottling, microcrystalline, chalky, weathered, fossiliferous to pelletal, poor visible porosity, abundant chalk in samples, scattered cherts including oolitic chert

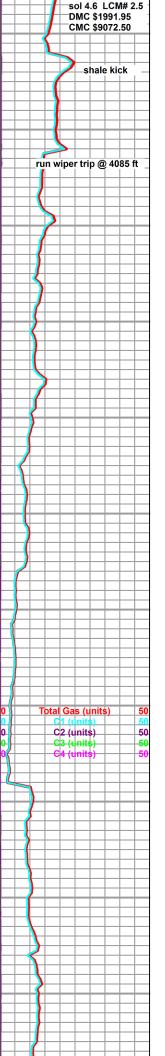
limestone, mixed fossiliferous, abundant chalk, scattered gray and tan chert, fresh, sharp, no shows  $\,$ 

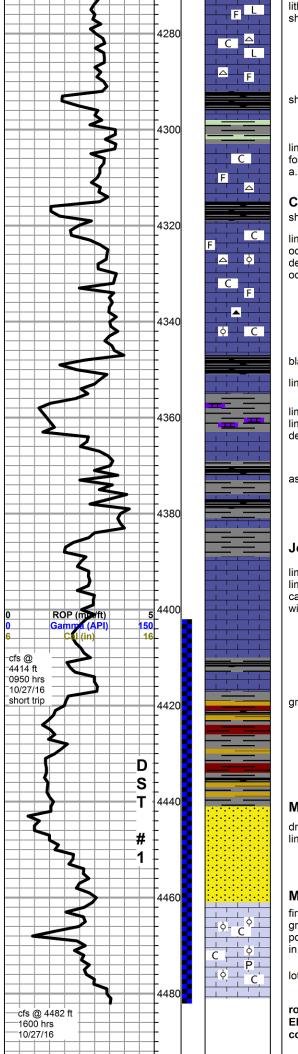
limestone, cream, soft, chalky, limestone, gray to light gray, cryptocrstallline, lithographic, sub-lithographic and fossiliferous, dense, no shows, moderate chalk in samples

shale, black carbonaceous

## Pawnee 4265 -1494

limestone, white to cream, micro-cryptocrystalline, chalky, grainy, poor visible porosity, with dense cryptocrystalline limestone, gray,





lithographic, abundant chalk and chert, frosted white to smokey gray, sharp, fresh, no shows

shale, black carbonaceous

limestone, cream to tan and gray, micro-cryptocrystalline, fossiliferous, chalky to dense, poor visible porosity, no shows, chert a.a.

#### Cherokee 4315 -1544

shale, black carbonaceous

limestone, white to light gray, chalky, weathered, fossiliferous to oolitic, limestone, gray to tan and brown, crypto-microcrystalline, dense to cherty, fossiliferous to oolitic, tan and gray chert, some oolitic chert, no shows

black carbonaceous shale

limestones as above, chalkier

limestone, white to cream, very chalky fossiliferous, soft, with: limestone, gray to brown mottled, pelletal to oolitic to fossiliferous, dense, no shows

as above with black and gray shales

# Johnson Zone 4389 -1618

limestone, gray to tan, cryptocrystalline, fossiliferous, dense, with limestone, light gray, fossiliferous, very chalky, trace secondary calcite, no visible porosity, no shows, moderate chalk in samples with trace small chert shards

gray, maroon, black, red and olive/yellow shales

# Morrow Sand 4441 -1670 (E-Log 4449 -1678)

drilled like sand, but no sand present in samples, only shale and limestone from above

# Mississippian 4461 -1690 (E-Log 4453 -1682)

first Miss rock came up in 4480 sample, limestone, cream to light gray, very chalky fine oolitic, some weathered to chalk, poor visible porosity, some scattered cherts, abundant chalk, heavy milky wash in samples, no odor and no shows

lots of pyrite nodules in cfs sample

rotary TD 4482 ft @ 1600 hrs 10/27/16 ELI Wireline TD 4484 ft complete logging operations

