

# LITHOLOGY STRIP LOG

## WellSight Systems

Scale 1:240 (5"=100') Imperial

Measured Depth Log

Well Name: Herman L. Loeb LLC. School Trust #21-4

Location: NW SE NW SW, Sec. 4-T35S-R12W, Barber Co., KS.

License Number: 15-007-24125-00-00

Region: Hardtner

Spud Date: 1/23/14

Drilling Completed: 2/2/14

Surface Coordinates: 1694' FSL & 682' FWL, Sec. 4-T35S-R12W

Bottom Hole Coordinates: Same as above

Ground Elevation (ft): 1443'

K.B. Elevation (ft): 1452'

Logged Interval (ft): 3,600' To: 5,560' Total Depth (ft): 5,560'

Formation: Simpson

Type of Drilling Fluid: Freshwater/Gel to 3,153'; Chemical Gel 3,153' to RTD.

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

### OPERATOR

Company: Herman L. Loeb, LLC.

Address: P.O. Box 838

Lawrenceville, IL. 62439-0838

815-556-0756

### GEOLOGIST

Name: James R. Hall (Wellsite Supervision)

Company: Black Gold Petroleum

Address: 5530 N. Sedgwick

Wichita, KS. 67204-1828

316-217-1223

### Cores

None Taken

### DSTs

DST #1 Mississippi Chert, 4,819' - 4,837' (18'), 30-45-30-60, IH 2485, IF 15-19 (1" blow), ISI 142 (no blow), FF 17-24 (3.5" blow), FSI 135 (no blow), FH 2417, Rec; 170 GIP, 10' SOCM (trace oil, 99% mud), BHT 122F.

DST #2 Mississippi, 4,842' - 4,897' (55'), 15-45-30-60, IH 2512, IF 25-29 (2" blow), ISI 207 (no blow), FF 27-36 (3" blow), FSI 156 (no blow), FH 2496, Rec; 100' GIP, 20' OCM (3% oil, 97% mud), BHT 117 F.

## Comments

1/22/14 MIRU Sterling Drilling Rig #4, Spud on 1/23/14.

Set new 13 3/8"(55#) Surface Casing at 264' with 300 sacks cement. Cement did Circulate.

Ran 5 1/2" production casing.

Surveys: 0.75 @ 270', 0.25 @ 987', 0.5 @ 2,070', 0.75 @ 3,312', 1.0 @ 4,837', 0.5 @ 5,049', 0.5 @ 5,560'.

BIT #1 17 1/2" to 270'. Bit #2 7 7/8" RR JZ HA-116 from 270 to 321' in 0.75 hrs. Bit #3 7 7/8" PDC- Logic PL51653 from 321' to 4,837' in 80.5 hrs. Bit #4 7 7/8" RR JZ HA-20Q from 4,837' to 5,049' in 20.25 hrs. NB #5 PDC-JZ P1616195H from 5,049' to 5,560' in 19.5 hrs.

Wiper trip @ 4,746' (40 stands), some stands were worked over 10min. Prior to DST #1 strap pipe 0.86' long to the board.

At 5,049' trip out for NB PDC and drop survey. At RTD made (15 stand) wiper trip, prior to conditioning hole and tripping out for open hole logs.

Mud Co. Brad Bortz and Terry Ison.

Open Hole Logs; Halliburton, (Liberal, Ks.) Sheldon Ingersoll.

DST's : Trilobite Testing (Pratt Office). Tester: Ryan Reynolds.

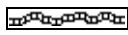
This Lithology Strip Log has been shifted 5' shallow to correlate with the Open Hole E-Logs!

E- log Tops: Heebner 3,832 (-2380), Itan 4,088 (-2636), Stalnaker SS 4,134' (-2,682'), 4,364 (-2912), Swope 4,542 (-3090), Hertha 4,569 (-3,117), Pawnee 4,704 (-3252), Cherokee Shale 4,751' (-3299), Cherokee Sand 4,771' (-3319) Mississippi Chert 4,806' (-3354), Kinderhook 5,104' (-3652), Woodford 5,178' (-3726), Viola 5,234' (-3782), Simpson Shale 5,344' (-3892), Simpson Sand 5,364' (-3912), Lower Simpson Sand 5,520' (-4068).

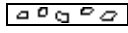
## ROCK TYPES



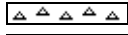
Anhy



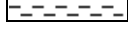
Bent



Brec



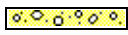
Cht



Clyst



Coal



Congl



Dol



Gyp



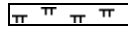
Igne



Lmst



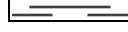
Meta



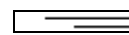
Mrlst



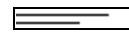
Salt



Shale



Shcol



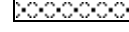
Shgy



Slstst



Ss



Till

### ACCESSORIES

#### MINERAL

- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Breclrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp
- Hvymin
- Kaol
- Marl

- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff

#### FOSSIL

- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral

- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant
- Strom

#### STRINGER

- Anhy
- Arg
- Bent
- Coal
- Dol

- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg

#### TEXTURE

- Boundst
- Chalky
- Cryxin
- Earthy
- Finexin
- Grainst
- Lithogr
- Microxin
- Mudst
- Packst
- Wackest

### OTHER SYMBOLS

#### POROSITY

- Earthy
- Fenest
- Fracture
- Inter
- Moldic
- Organic
- Pinpoint
- Vuggy

#### SORTING

- Well
- Moderate
- Poor

#### ROUNDING

- Rounded
- Subrnd
- Subang

- Angular

#### OIL SHOW

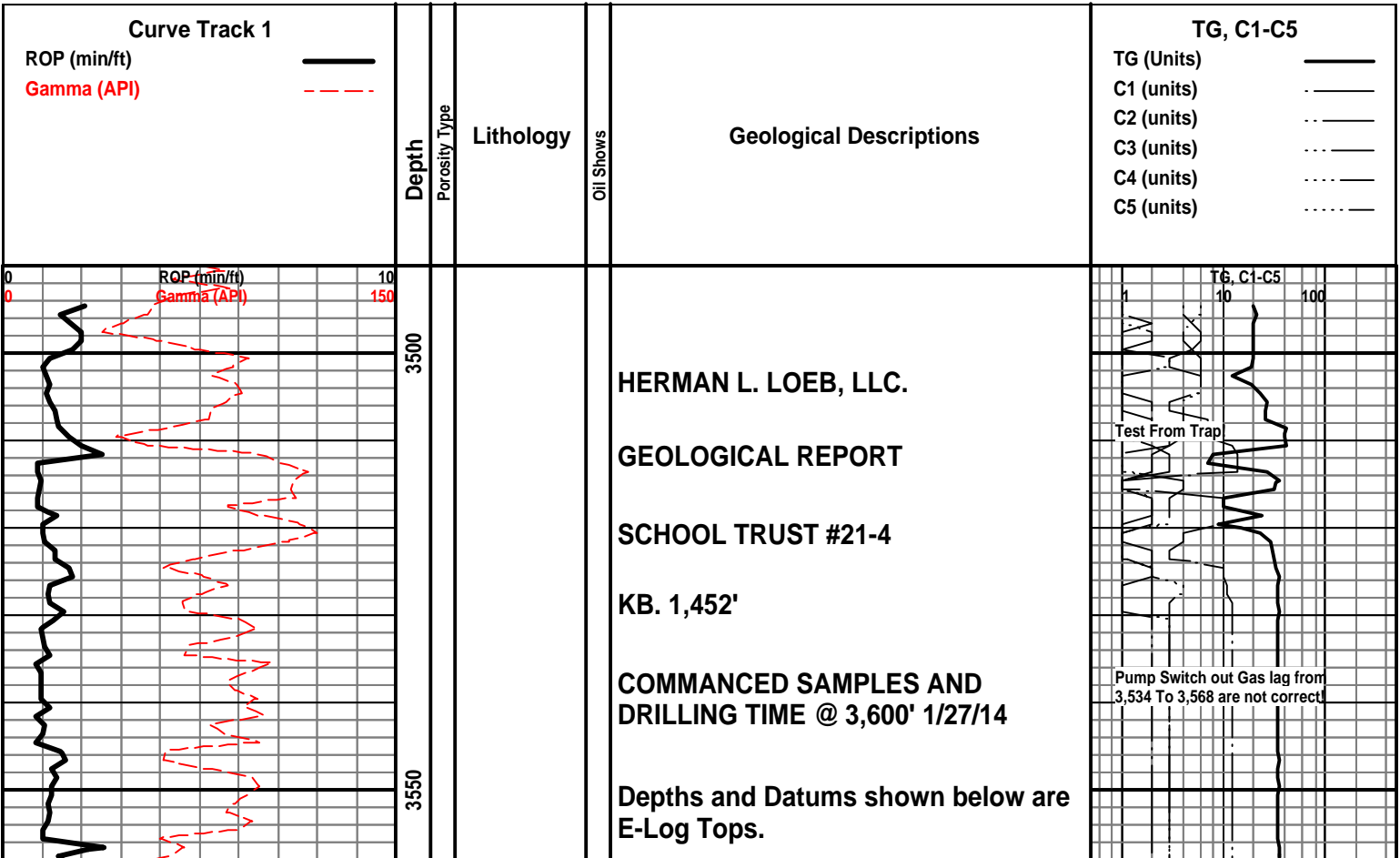
- Even
- Spotted
- Ques
- Dead

#### INTERVAL

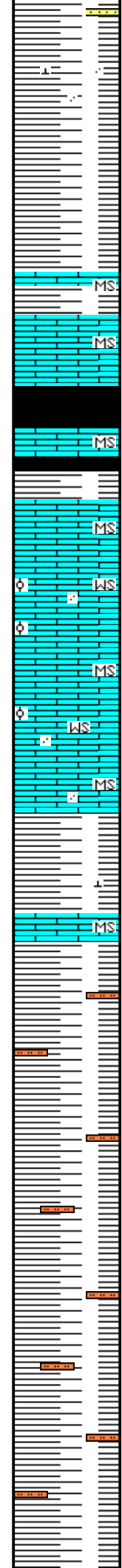
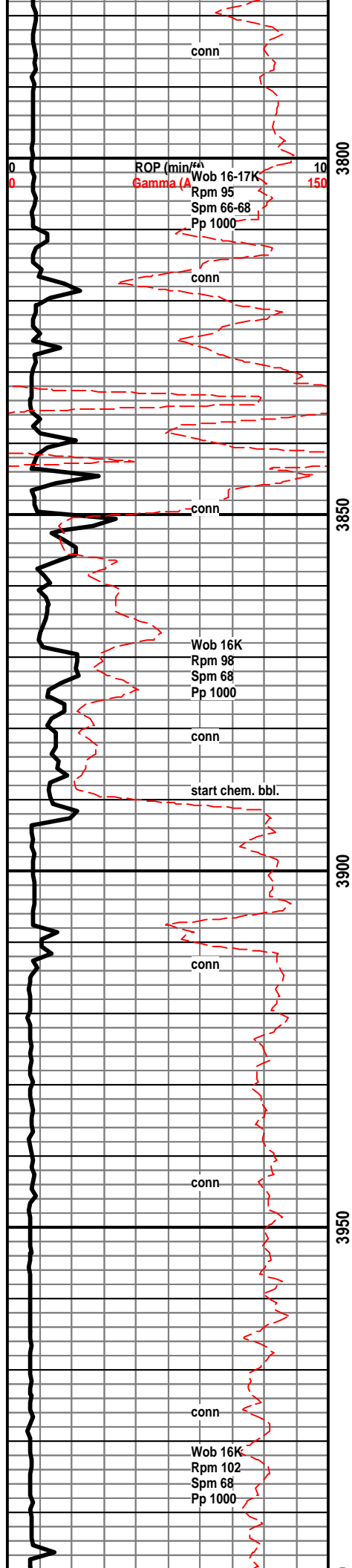
- Core
- Dst

#### EVENT

- Rft
- Sidewall







Shale; as above, some highly arenaceous, less sandstone with dep here.

Shale; as above; slight increase in black shales, most dark gray to gray earthy texture.

Mudstone; dark gray to brown, tight, chalky texture.

Heebner 3832 (-2380)

Shale; black, carbonaceous, some gassy-hard.

Mudstone; light gray chalky, to light brown chalky to silky texture, no show.

Wackestone; off white-chlky soft, to light tan and off white, chalky micro-oolitic to sandy look, dull mineral fluorescence, no cut, no show.

Mudstone; off white to light gray mixed with micro-oolitic Wackestone, most chalky matrix, dull mineral fluorescence, no show.

Mudstone; off white, chalky, firm to brittle, tight, mineral fluorescen only, no show, mixed with Wackestone; as above.

Shale; gray to dark gray, earthy, slight influx, brown-earthy, blocky to tabular, slightly calcareous.

Mudstone; light gray chalky, to rare brown-crystalline with a silky texture, tight.

Shale; increase in light gray to gray, most soft-earthy texture, less black shales with depth, trace siltstone-cave?

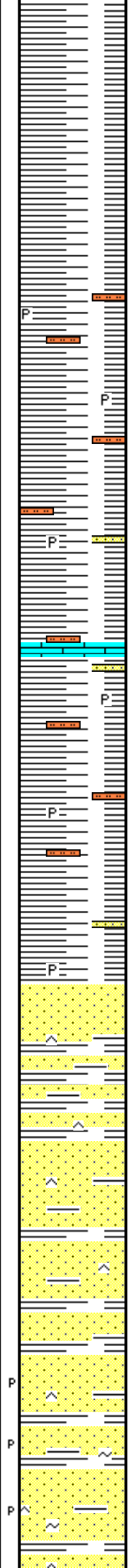
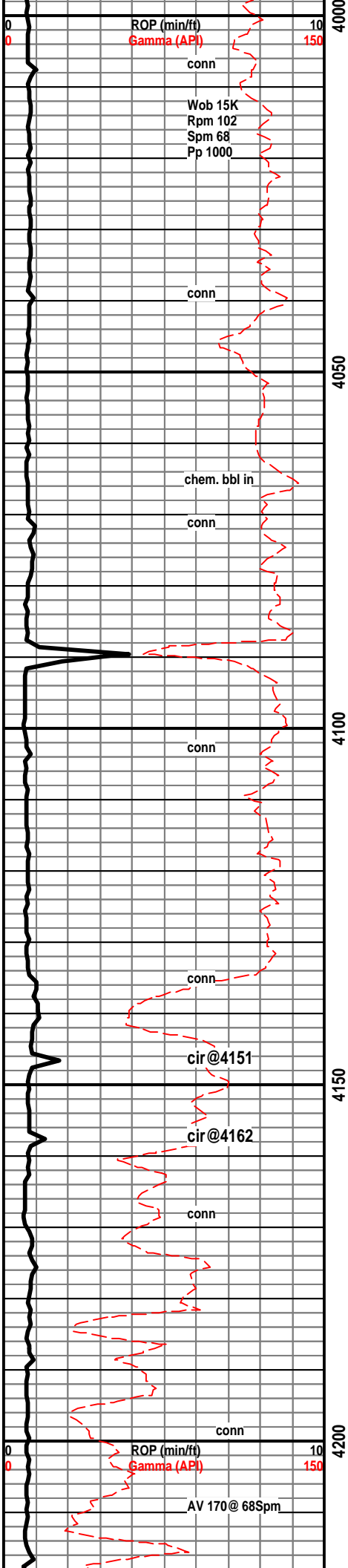
Shale; light gray, gray, soft to firm, some arenaceous to silty, dull earthy texture.

Shale; gray, light gray, earthy, soft to firm as above some silty to arenaceous.

Shale; infsx lght gray to pale gray-green, silty to slight arenaceous look, majority of sample is as above light gray, gray, earthy, soft to firm.

Shale; gray, dark gray, firm to soft, most earthy textrue, occasional





smooth texture, less arenaceous and silty with depth, samples wash heavy gray.

Shale; as above, slight influx, dark gray and black shales.

Shale; light gray to dark gray, rare black, firm to hard, tabular to platy, some silty texture, sample wash heavy gray, rare inclusions of pyrite.

Shale; as above, rare free ufg sandstone stringers, wicons, wlsrtd, tight, no show.

Shale; light gray, some dark gray, firm to soft, occasionally hard, some silty, rare ufg sandstone; with carbonaceous looking inclusion, no show.

Shale; as above, rare free pyrite, rare Wackestone; off white to light cream, micro-oolitic-cave?

Shale; light to dark gray, tabular to platy, some siltstone laminations, rare free off white sand cluster-cave?, no show, no cut on selected samples.

**Stalnaker Sandstone; 4134 (-2682)**

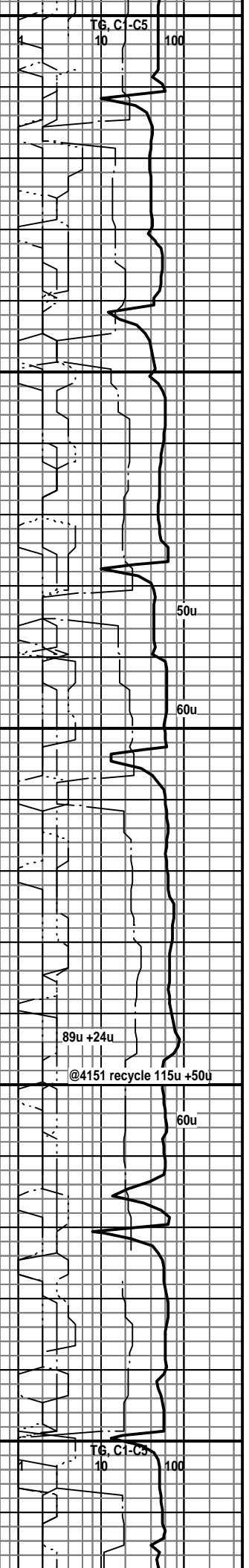
Sandstone; rare off white, ufg, wicons, vwlsrtd, to fg-wicons to cons wlsrtd, no fluorescence, no cut on selected samples, very poor sandstone representation in the samples, no visible porosity in the dry samples, no visible stain.

Sandstone; approx 5% of sample, fg to ufg, light gray to off white, cons, to plycons, subrnd, wlsrtd, some dark inclusions, no visible show, no cut on selected samples, no porosity visible in dry, less sand % with circulated time.

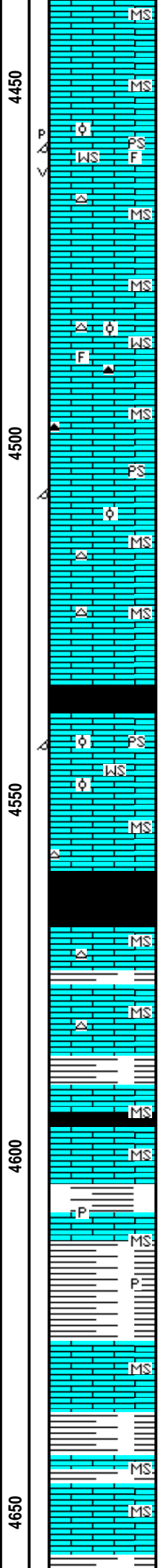
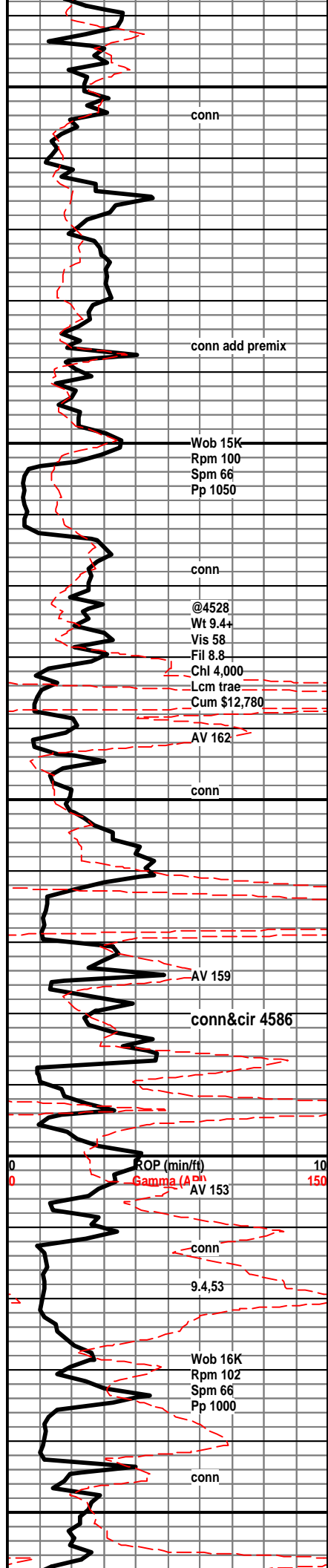
Sandstone; increase to approx. 40% of sample, light gray to off white, ufg to vfg, most wicons, vrywlsrtd, subrnd, no visible porosity in the wet or dry sample, black inclusions and laminations, no show, some micaceous.

Sandstone; as above.

Sandstone; off white to light gray, ufg to vfg, looks tight in wet sample, no show, black inclusions and some black laminations, rare glauconite in the matrix, non-calcareous cement, rare barren porosity in the dry sample, Shale; rare black and brown shales, most are gray and silty-cave?







Mudstone; gray to light gray, hard, most chalky, some silky-crystalline, no show.

Mudstone; cream to tan, dense.

Packstone to Wackestone; white to tan, most chalky matrix, micro-oolitic, rare tan oomoldic, mineral fluorescnece only, no show.

Mudstone; cream to tan, chalky to crystalline, dense, rare blue-gray free chert, no show.

Mudstone; cream to brown, most chalky, occasionally crystalline-silky texture, dense, no show.

Wackestone; off white, most chalky, soft to brittle, micro-oolitic, rare free dark brown and off white fresh chert, no show, dull mineral fluorescence only.

Mudstone; cream to tan occasionally light gray, dense, most chalky texture, free dark gray chert.

Packstone; tan to cream, crystalline matrix, oomoldic, mineral fluorescnece only, no cut on selected samples.

Mudstone; off white, cream, chalky, free light gray fresh chert.

Shale; black, soft, some hard-cabonaceous, gassy.

**Swope 4542 (-3090)**

Packstone; cream, to tan, oomoldic to micro-oolitic, mineral fluorescence, no cut.

Mudstone; off white, tan chlkky to crystalline, soft to brittle, free gray chert, some fossiliferous.

Shale; large influx, black, carbonaceous, soft to hard and gassy.

**Hertha 4569 (-3117)**

Mudstone; cream to off white, chalky, rare sample w/dead tary spott stain, residual ring cut, no live oil, no visible gas bubbles.

Mudstone; off white to tan, chalky to trace crystalline, rare off white, fossiliferous to oolitic free chert.

Shale; gray dark gray to black.

Shale; black gassy.

Mudstone; off white, cream, tan, most chalky.

Shale; most as aobve, however influx pale green, some with pyrite inclusions.

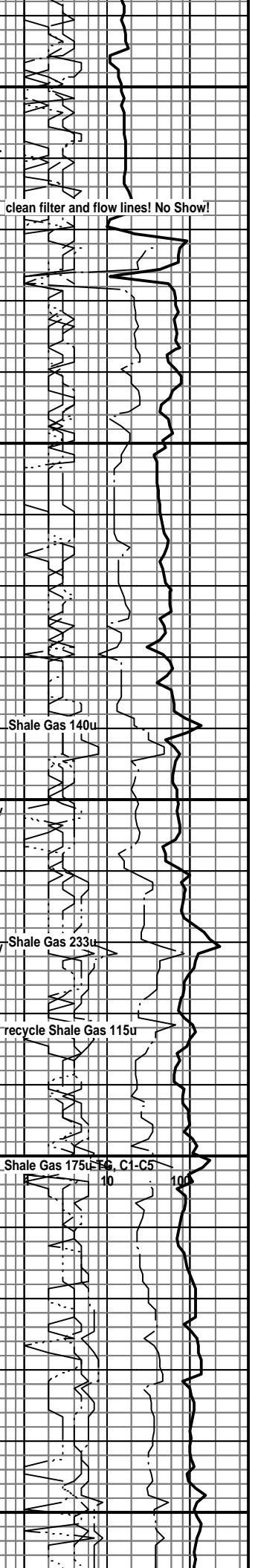
Shale; most black to dark gray, influx, pale green, brick red, brown.

Mudstone; small influx tan to brown, crystalline to chalky, dense.

Shale; influx, pale green erathy to waxy.

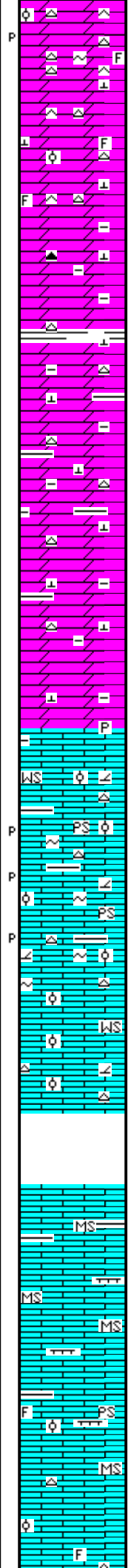
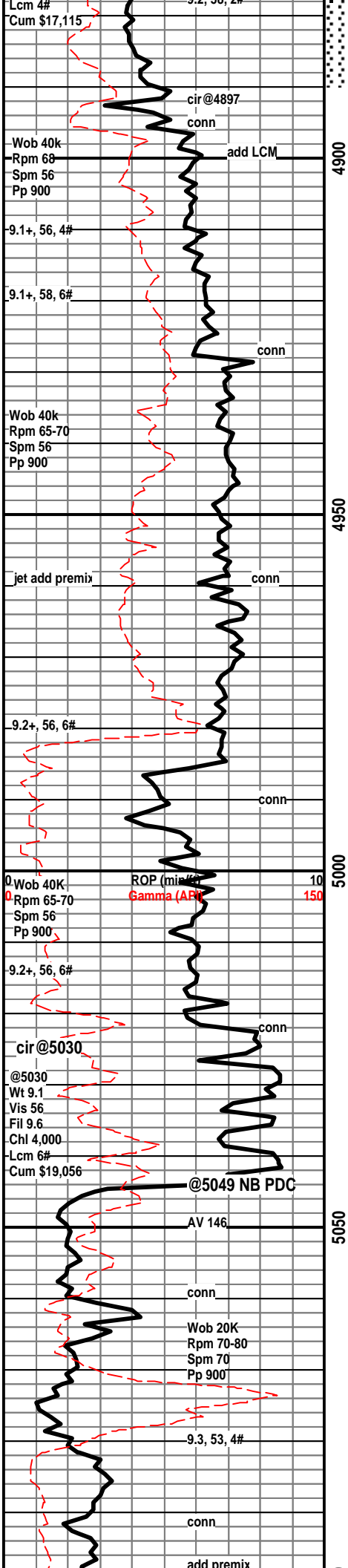
Mudstone; tan, to brown to light gray, silky-crystalline to dull and chalky, dense.

Shale; pale green some mottled brown, earthy to waxy luster.









porosity.

Dolomite; some siliceous, very fine sucrosic to gritty texture, as above some fossil fragments and some spicular look, hard, very weak odor-much less show here, chert as above, fresh and dolomite chert.

Dolomite; brittle less siliceous to limy, some highly siliceous, free white fresh chert, some with spotty brown stain on edge, micro-oolitic look and micro-fossiliferous look, rare visible spicular look, much less stain with depth, no sample odor, over all look as above, no real change except lack of new show.

Most as above; trace gray, very hard, gritty texture limy dolomite, argillaceous residue, dense, rare dark gray free chert, change in lithology here? or just a stringer?

Shale; gray to dark gray, waxy texture, soft, cave?

Dolomite; gray to dark gray, gritty texture, very hard, to hard, some siliceous, some with argillaceous residue, dense, reaction to acid only when crushed, some slightly limy, free off white to some blue mottled free chert, still some off white with spotty brown oil stain-ol show from above. Shale; cary dark gray, most non-calcareous-cave

Dolomite; gray, occasionally light gray, hard to very hard, more of a limy reaction when crushed in the acid, gritty texture, some argillaceous residue when acidized, platy to tabular, some blocky, dense, less free chert with depth, still traces of old show from above, still gray to dark gray and traces of black shales in the sample-cave?

As above no real change here, a bit more limy with depth, rare pyrite inclusion in one sample, looks like we have lots the free chert here.

Rare; Packstone-Wackstone; cream to off white, firm to soft, micro-oolitic to oolitic, rare spotty brown stain-milky cut, no odor, no free oil, some with chert inclusions with oil stain.

5% Packstone to Mudstone; cream to off white, chalky to crystalline matrix, rare show as above, most show between matrix and chert, rare pp por., no sample odor.

10% Packstone to Mudstone; cream to off white, as above, rare sample with brown oil droplets when broken, milky cut, no sample odor. Majority of sample is Dolomite and limy Dolomite as above. 20min sample; 30% Packstone/Wackstone; aa, rare show from above-no odor.

40% Wackstone to Packstone; cream to off white, brittle to very soft-chalky, micro-oolitic to oolitic, rare show from above, trace white chert, free and in matrix, rare free calcite

Did not circulate samples, prior to tripping for new bit!

Sample worthless, large shale cuttings!

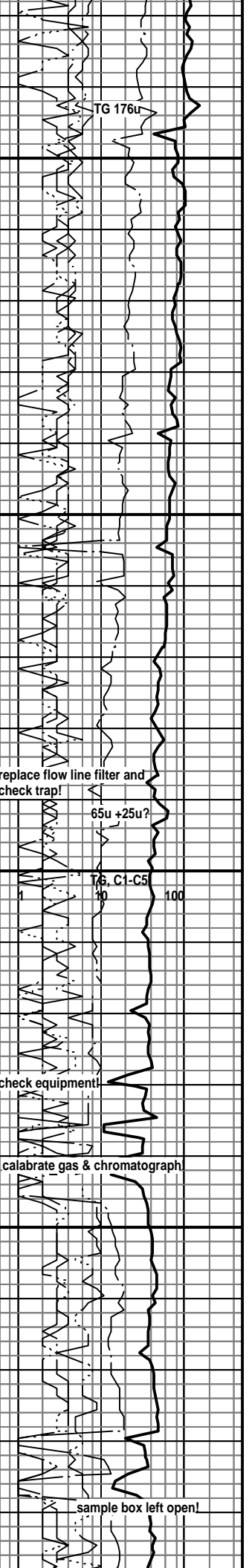
5% Mudstone; cream, off white, chalky, most soft, shale as above, sample quality worthless.

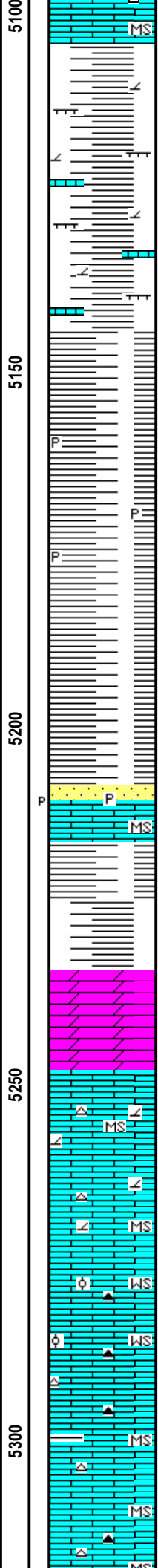
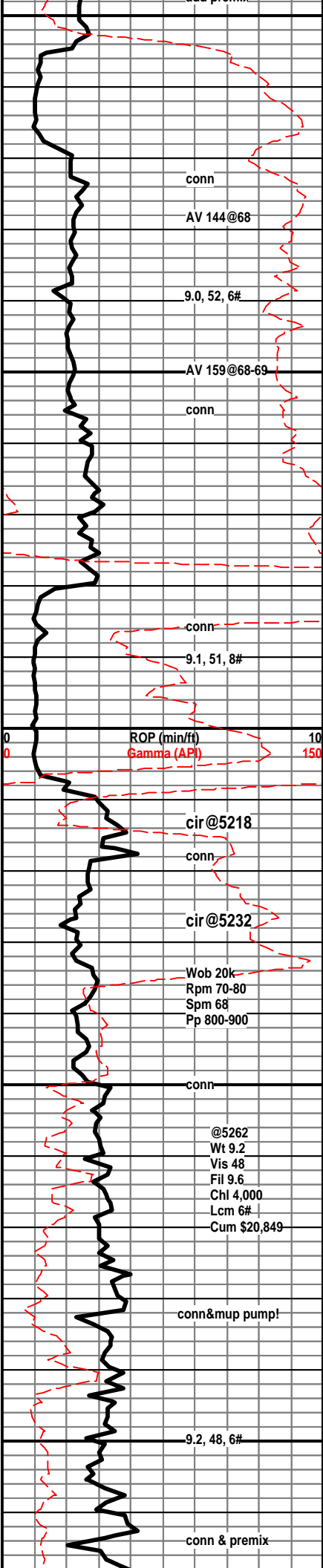
Trace Mudstone; gray, cream to rare brown, chalky-soft, Shale; increase in gray-green-waxy, and marly, sample still worthless.

10% Mudstone; brown, to cream, chalky, firm to soft, sample majority is shale and marl, quality as above.

Packstone; cream to off white, soft, chalky, micro-oolitic to micro-fossiliferous, influx pale green marl, no show.

Mudstone; off white to light gray, chalky, firm to soft, rare chert inclusions, no show, Wackstone and Packstone are 50% of sample here, quality improving with depth.





**Kinderhook 5104 (-3652)**

Shale; slight increase in % here, gray, dark gray, black, pale green-wxy, some marly to dolomitic, loss of limestone % here, overall sample quality still poor, less than quality sample representation!

Shale; aa above. 30% Mudstone; cream to off white, occasionally light brown, chalky, no visible show.

Shales; and stringers of limestone as above.

Shale; increase in light gray, soft to firm, earthy texture, decrease in limestone, less calcareous and dolomitic shales here.

Shale; as above, platy to tabular, some with black carbonaceous laminations, rare free pyrite.

**Woodford Shale 5178 (-3726)**

Shale; influx, black mottled dark gray when broken, the soft has no visible gas, however the hard tabular to blocky has gas bubbles.

Shale; increase in black-mottled dark brown and dark brown, gritty texture, rare spotty bright yellow fluorescence-slow milky cut-visible gas bubbles, no odor, no visible sandstone here.

5218: 4 circulated samples; 13 clusters of sandstone found, opaque fg, wlsrtd, porcons, subrnd, rare spotty black structural shale, only clusters with a slow milky cut, only 2 of the 4 have dull yellow fluorescence, no odor, rare spotty stain, no visible oil, rare visible porosity, most are barren.

5234: 15 clusters of sandstone as above, rare spotty looking stain-but no cut, only 5 samples with fluorescence, rare pyrite cement, 60min; 1 cluster with pyrite cement and dark spotty stain, dull fluorescence instant milky cut, no odor, no visible live oil or oil droplets..

Shale; influx, gray-green, waxy.

**Viola 5234 (-3782)**

Dolomite; limy; light gray, soft to firm, chalky to gritty texture.

Mudstone; light gray to cream and light tan, gritty to chalky-smooth, some dolomitic, no show, samples are still 60% shale as above, indicating poor sample quality.

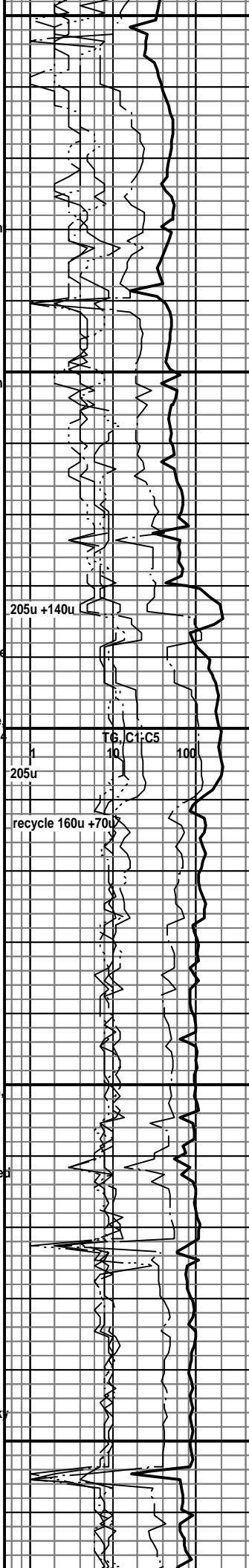
As above; still much shale in samples, dolomitic limestone, scattered free chert some pale blue, most off white, sample quality still poor.

Wackestone; cream to off white, most chalky, occasionally silky-crystalline look, micro-oolitic, oolites in a tight looking matrix, one sample with bright yellow fluorescence-fluor. cut, no cut on other selected samples, are free gray chert, 40%-50% limestone here.

Mudstone; increase in cream to light gray, soft to brittle, most chalky matrix, rare dark gray shale laminations.

Mudstone; cream to light gray as above, some micro-oolitic Wackestone, rare bright fluorescence-no cut, cream to gray chert, some matrix attached.

As above; trace brown, silky crystalline dense Mudstone.



Wob 20k  
Rpm 75  
Spm 64-68  
Pp 1000

conn

cir@5360

9.2, 54, 6#

cir@5376

conn

ROP (min/ft)  
Gamma (API)

conn

Wob 20k  
Rpm 72  
Spm 66  
Pp 1050

conn&add premix

Wob 18-20k  
Rpm 75-80  
Spm 60-65  
Pp 1050

conn

9.3, 65, 6#

conn

cir@5525

@5560  
Wt 9.3  
Vis 58  
Fil 8  
Chl 4,000  
Lcm 8#  
Cum \$24,012

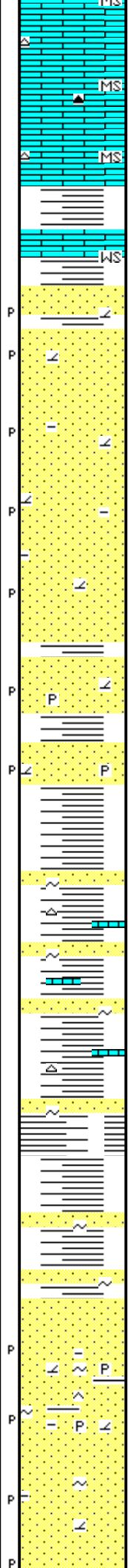
conn

5350

5400

5450

5500



Mudstone; cream to light gray, most chalky, trace brown-silky crystalline, light and dark gray chert, rare white-with old show, some chert fossiliferous.

Mudstone; most as above, influx buff to light brown, chlky to gritty fery fine crystalline look, no show.

**Simpson Shale 5344 (-3892)**

Shale; small influx sea green waxy, firm.

Wackestone; micro-oolitic, bright fluor., instant cut.

**Simpson Sandstone; 5364 (-3912)**

Sandstone; off white some mottled light gray, vfg to fg, wlcons to vwicons, sub rnd, wlsrtd, dolomite cement, trace structural shale, no cut on selected samples, looks tight in the wet, scattered pinpoint porosity on the vfg, no odor.

Sandstone; off white, opaque to light gray, trace with dark structural shale, trace with green clay, rare pyrite cement, fg to vfg, vwicons to prlycons, wlstrd, subrnd, slight dolomitic to silica cement, some dark gray spotty stain, no cut, no odor, no show, dray sample with tight clusters and clusters with barren pinpoint porosity.

Sandstone; smaller grained with depth, vwicons, wlstrd, subrounded to rounded, dolomitic cement, no show in the wet or dry sample, slight increase in pyrite cement and rare free pyrite in the sample.

Shale; gray, pale green, less sea green with depth, some scattered black, most firm.

Shale; very colored, most smooth, hard, sea green, to pale green, also gray, black, no calcareous, stringers of tan to brown gritty limestone.

Most as above; stringers of Sandstone; off white, to opaque, some with light tan stain-no cut, most wlcons, most vfg, no show.

Shale; slight increase in light gray platy, brittle, smooth texture, non-calcareous, sandstone; vfg, wlcons, more glauconitic here, dolomite cement, very little change from sample to sample, much cave?

Shale; increase in green and sea green, brittle, most platy, smooth to waxy textrue, Sandstone; ufg, wlcons, increase in glauconitic and green shale laminations here, no show.

**Lower Simpson Sand 5520 (-4068)**

Sandstone; ufg, wlcons, wlstrd, rnd-subrnd, glauconite and dark structural shale in the matrix, majority of the sand is light gray in color, dolomitic to siliceous cement, trace scattered barren porosity in the dry, rare pyrite cement, rare dull fluorescence-no cut, no odc no visible live show. 80min 5% prlystrd med and fg clusters, off white in color, no show.

Sandstone; light gray, some tan and off white, trace opaque, majori fg, vwicons to prlycons, wlstrd, subrnd, slightly dolomitic cement to silica cement, structural shale and glauconite in the matrix, occasionally clean matrix, no show, no odor.



TG, C1-C5  
10 100

