David A. Barker

CONSULTING GEOLOGIST

Geologist's Report
Drilling Time and Sample Log

OPERATOR Chieftan Oil Co., Inc
LEASE Millie WELL NO. "B"-1
FIELD Wildcat API No. 15-007-23832
LOCATION NW SE SE NE 2180'FNL & 340'FEL
SEC. 16 TWP. 35S RGE. 11W
COUNTY Barber STATE Kansas

CONTRACTOR Fossil Rig #2
COMM. 01-21-2012 COMP. 02-01-2012
RTD 5605' LOG TD 5604'
SAMPLES SAVED FROM 3500' TO TD
DRILLING TIME KEPT FROM 3500' TO TD
SAMPLES EXAMINED FROM 3500' TO TD
GEOLOGICAL SUPERVISION FROM 3500' TO TD
MUD UP 01/12/2012 TYPE MUD CHEMICAL

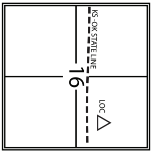
FORMATION	LOG TOP	LOG DATUM	SAMPLE TOP	SAMPLE DATUM	STRUCT. COMP.
Heebner	3740	-2415	3737	-2412	
Toronto	3750	-2425	3746	-2421	
Kansas City	4320	-2995	4318	-2993	
Hushpuckney Sh.	4508	-3183	4508	-3183	
Cherokee Sh.	4713	-3388	4712	-3387	
Mississippian	4805	-3480	4810	-3485	
Kinderhook	5129	-3804	/	/	
Chattanooga Sh.	5158	-3833	5160	-3835	
Viola	5234	-3909	5236	-3911	
Base of Viola	5332	-4007	5334	-3909	
Simpson Sd.	5352	-4027	5351	-3926	
Lower Simpson Sd.	5509	-4184	5511	-4186	
Arbuckle	5538	-4213	5542	-4217	

REFERENCE WELL FOR STRUCTURAL POSITION

ELEVATION
KB 1325'
DF
GL 1317'
Measuremnts Are All From KB

CASING RECORD
SURFACE 8 5/8" @ 836'
W/ 175 SX
PRODUCTION 5 1/2" @ 5604'
W/ 225 SX

ELECTRICAL SURVEYS
CNL, CDL, DIL



GEOLOGIST

Name: **David A. Barker**
Company:
Address: **212 N. Market, Suite# 320**
Wichita, Kansas 67202
(316) 259-4294

OPERATOR

Company: **Chieftain Oil Co., Inc.**
Address: **605 S. 6th, P.O. Box 124**
Kiowa, Kansas 67070

Daily Status

Morning depth:

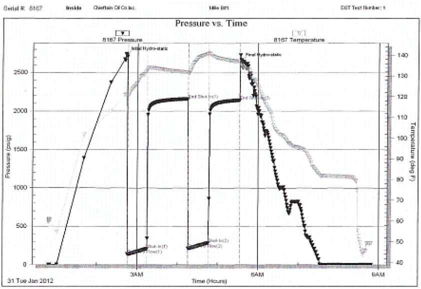
1-21-2012: Spud @ 4:00 P.M.
1-22-2012: set 7 joints of 13 3/8" with 325 sx cmt plug down @ 6 15 AM
1-23-2012: lost returns at 574' ran 20 jts of 8 5/8" set at 836, 200 sx, plug down at 11: 30 P.M. plug did not hold
1-24-2012: morning depth of 836', 11:00 to 12:30 A.M. cement with 1" with 20 SX, drill plug at 9:14 A.M., straight hole 1544, 1 deg
1-25-2012: morning depth 2190', straight hole @ 2650', 1 deg
1-26-2012: morning depth 3083' straight hole @ 3550' 1.5 deg,
1-27-2012: morning depth 3860' straight hole 3895' 1 deg
1-28-2012: morning depth 4510'
1-29-2012: morning depth 4866'
1-30-2012: morning depth 5247' DST #1 5335' to 5360',
1-31-2012: morning depth 5360'
2-1-2012: morning depth 5495', T.D. 5605' @ 3:01 P.M.,
2-2-2012: run 134 joints of new 5 1/2 " , set at 5604', cmt 225 sx, plug down at 2:30 P.M.

Remarks

Set 5 1/2" casing to 5604' to further test the Mississippian formation through pipe.

DST #1

5335'-5360' 30-60-30-45 IF: Fair Blow Increase to 13", FFP fair blow, inc to 9", REC: 185' MW w/O specs, 125' MW w/ O specs, 215' HMW w/O specs, HP 2731#-2652#, IFP 139#-208#, FFP 213#-284#, SIP 2158#-2141#, Chlorides 90,000 ppm



ACCESSORIES

FOSSIL
- **Algae**
- **Amph**
- **Belm**
- **Bioclst**
- **Brach**
- **Bryozoa**
- **Cephal**
- **Coral**
- **Crin**
- **Echin**
- **Fish**
- **Foram**
- F **Fossil**
- **Gastro**
- **Oolite**
- **Ostra**
- **Pelec**
- **Pellet**
- **Pisolite**
- **Plant**
- **Strom**
- **Fuss**
- **Oomold**

MINERAL
- **Anhy**
- **Arggrn**
- **Arg**
- B **Bent**
- **Bit**
- **Brecfrag**
- **Calc**
- **Carb**
- **Chtdk**
- **Chtlt**
- **Dol**
- + **Feldspar**
- **Ferrpel**
- **Ferr**
- **Glau**
- **Gyp**
- **Hvymin**
- K **Kaol**
- **Marl**
- **Minxl**
- **Nodule**
- **Phos**
- P **Pyr**
- **Salt**
- **Sandy**
- **Silt**
- **Sil**
- S **Sulphur**
- **Tuff**
- **Chlorite**
- **Dol**
- **Sand**
- **Slty**

STRINGER
- **Anhy**
- **Arg**
- **Bent**
- **Coal**
- **Dol**
- **Gyp**
- **Ls**
- **Mrst**
- **Sltstrg**
- **Ssstrg**
- **Carbsh**
- **Clystn**
- **Dol**
- **Grysh**
- **Gryslt**
- **Lms**
- **Sandylms**
- **Sh**
- **Sltstn**

TEXTURE
- BS **Boundst**
- C **Chalky**
- CX **CryxIn**
- E **Earthy**
- FX **FinexIn**
- GS **Grainst**
- L **Lithogr**
- MX **MicroxIn**
- MS **Mudst**
- PS **Packst**
- WS **Wackest**

OTHER SYMBOLS

INTERVALS
- ■ **Core**
- **Dst**
- **Dst**

EVENTS
- ▷ **Rft**
- ▶ **Sidewall**
- **Cfs**
- **Conn**

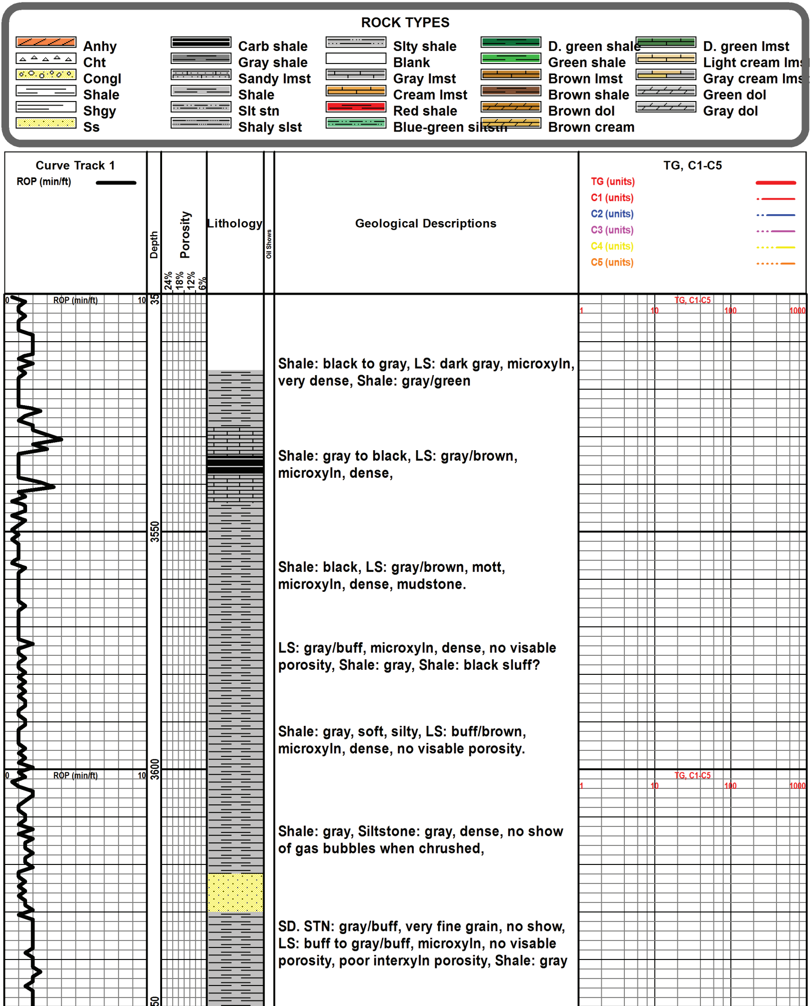
POROSITY TYPE
- E **Earthy**
- **Fenest**
- F **Fracture**
- **Inter**
- **Moldic**
- **Organic**
- P **Pinpoint**
- V **Vuggy**

LITHOLOGY
- **Anhy**
- **Cht**
- **Congl**
- **Shale**
- **Shgy**
- **Ss**
- **Carb shale**
- **Gray shale**
- **Sandy lmst**
- **Shale**
- **Slt stn**
- **Shaly slst**
- **Slty shale**
- **Blank**
- **Gray lmst**
- **Cream lmst**
- **Red shale**
- **Blue-green siltstn**
- **D. green shale**
- **Green shale**
- **Brown lmst**
- **Brown shale**
- **Brown dol**
- **Brown cream**
- **D. green lmst**
- **Light cream lmst**
- **Gray cream lmst**
- **Green dol**
- **Gray dol**

SORTING
- W **Well**
- M **Moderate**
- P **Poor**

ROUNDING
- R **Rounded**
- r **Subrnd**
- a **Subang**
- A **Angular**

OIL SHOWS
- ● **Even**
- ◑ **Spotted**
- ○ **Ques**
- D **Dead**
- ☒ **Gas show**



Shale: black to gray, LS: dark gray, microxyln, very dense, Shale: gray/green

Shale: gray to black, LS: gray/brown, microxyln, dense,

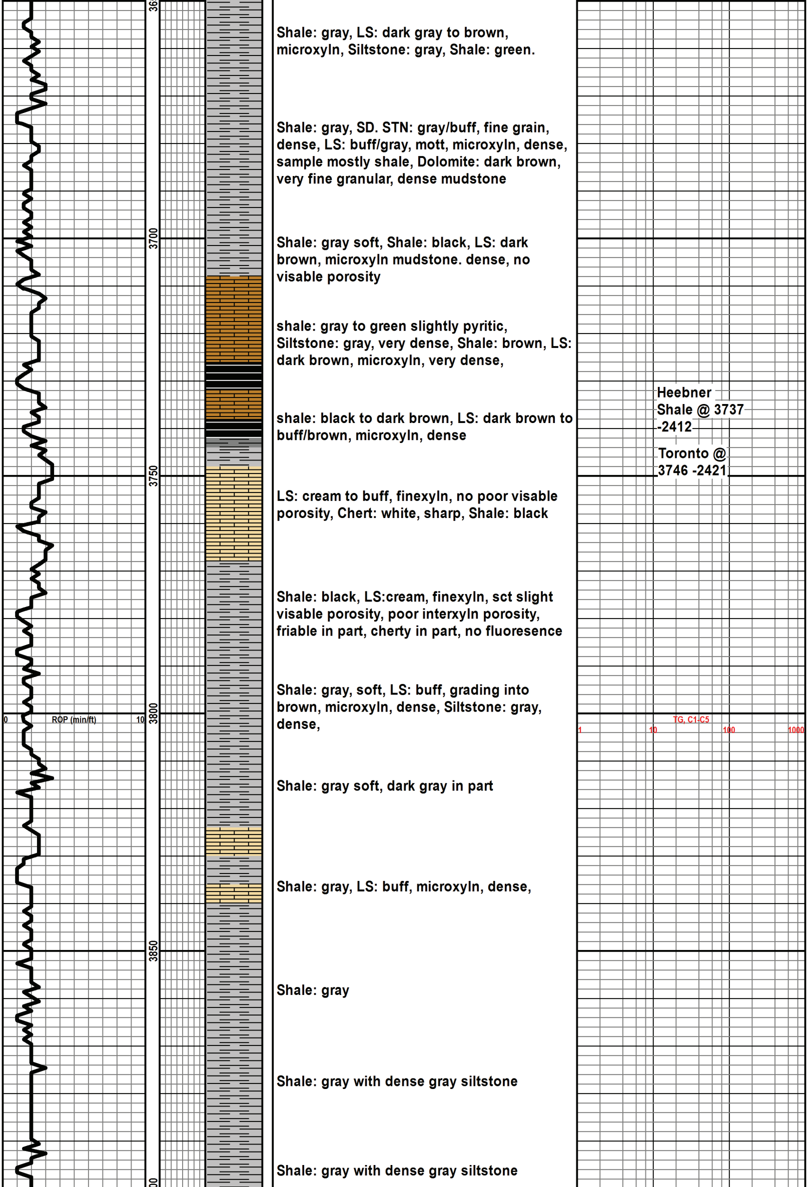
Shale: black, LS: gray/brown, mott, microxyln, dense, mudstone.

LS: gray/buff, microxyln, dense, no visable porosity, Shale: gray, Shale: black sluff?

Shale: gray, soft, silty, LS: buff/brown, microxyln, dense, no visable porosity.

Shale: gray, Siltstone: gray, dense, no show of gas bubbles when chrushed,

SD. STN: gray/buff, very fine grain, no show, LS: buff to gray/buff, microxyln, no visable porosity, poor interxyln porosity, Shale: gray



Shale: gray, LS: dark gray to brown, microxyln, Siltstone: gray, Shale: green.

Shale: gray, SD. STN: gray/buff, fine grain, dense, LS: buff/gray, mott, microxyln, dense, sample mostly shale, Dolomite: dark brown, very fine granular, dense mudstone

Shale: gray soft, Shale: black, LS: dark brown, microxyln mudstone. dense, no visable porosity

shale: gray to green slightly pyritic, Siltstone: gray, very dense, Shale: brown, LS: dark brown, microxyln, very dense,

Heebner Shale @ 3737 -2412

shale: black to dark brown, LS: dark brown to buff/brown, microxyln, dense

Toronto @ 3746 -2421

LS: cream to buff, finexyln, no poor visable porosity, Chert: white, sharp, Shale: black

Shale: black, LS:cream, finexyln, sct slight visable porosity, poor interxyln porosity, friable in part, cherty in part, no fluoresence

Shale: gray, soft, LS: buff, grading into brown, microxyln, dense, Siltstone: gray, dense,

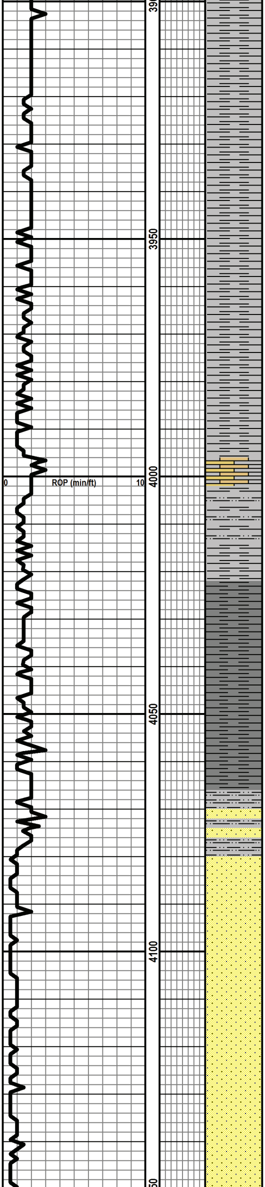
Shale: gray soft, dark gray in part

Shale: gray, LS: buff, microxyln, dense,

Shale: gray

Shale: gray with dense gray siltstone

Shale: gray with dense gray siltstone



Shale: gray, SD.STN: light gray, poor intergranular porosity, LS: brown, dense, microxyln, LS: buff, finexyln, dirty cream, poor interxyln porosity,

Shale: gray to green, Siltstone: gray, friable in part Shale: gray/green

increase in SD. STN: gray, fine grain, friable in part, no show, sample mostly gray shale, LS: buff, finexyln, poor interxyln porosity,

Shale: gray with Sd. STN: gray, fine grain, LS: brown, microxyln, dense,

Shale: gray to dark gray silty in part, LS: light gray/buff, finexyln, dense, no visable porosity.

flood of LS: light gray/buff, finexyln, poor interxyln porosity, Shale: gray, Siltstone: gray, very thin laminar, dense,

Shale: gray, soft,

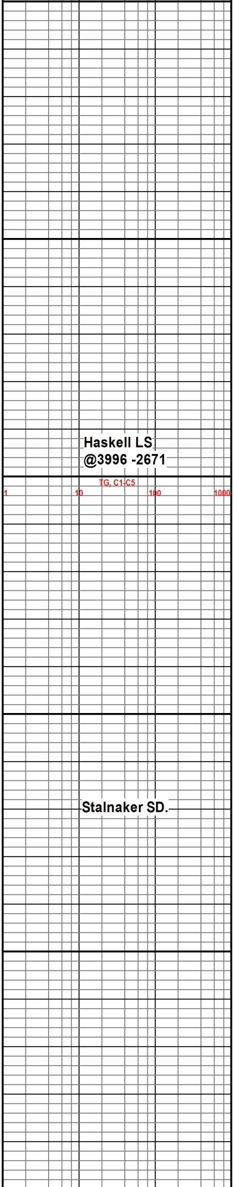
Shale: gray, Siltstone: light gray, LS: dark gray/brown, microxyln

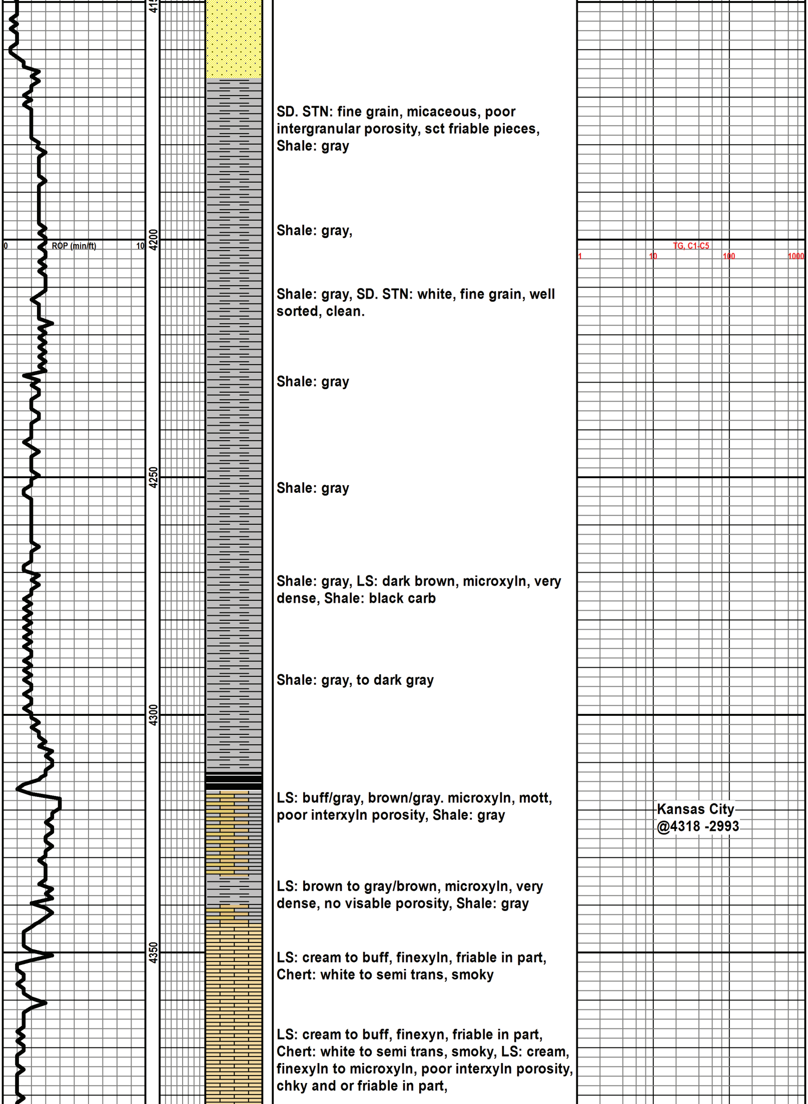
SD.STN. to Siltstone: light gray, fine grain, very dense.

SD.STN: light gray, poor intergranular poroisty, no show, sct fraible pieces

flood of SD. STN: fine grain, micaceous, poor intergranular porosity, sct friable pieces

SD. STN: fine grain, micaceous, poor intergranular porosity, sct friable pieces





SD. STN: fine grain, micaceous, poor intergranular porosity, sct friable pieces, Shale: gray

Shale: gray,

Shale: gray, SD. STN: white, fine grain, well sorted, clean.

Shale: gray

Shale: gray

Shale: gray, LS: dark brown, microxyln, very dense, Shale: black carb

Shale: gray, to dark gray

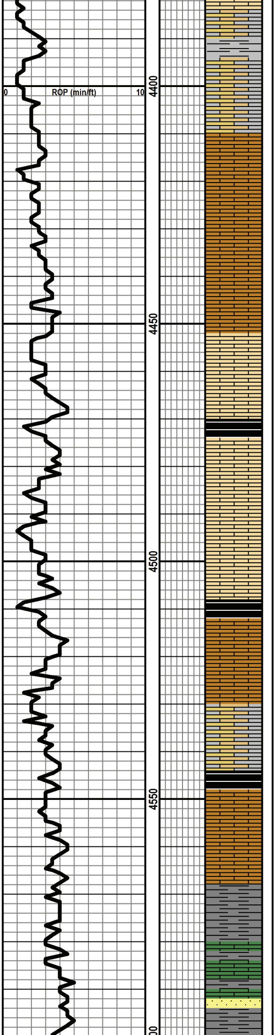
LS: buff/gray, brown/gray. microxyln, mott, poor interxyln porosity, Shale: gray

Kansas City
@4318 -2993

LS: brown to gray/brown, microxyln, very dense, no visable porosity, Shale: gray

LS: cream to buff, finexyln, friable in part, Chert: white to semi trans, smoky

LS: cream to buff, finexyn, friable in part, Chert: white to semi trans, smoky, LS: cream, finexyln to microxyln, poor interxyln porosity, chky and or friable in part,



LS: tan to dark gray microxyln, dense, Shale: gray, fossile fragments

LS: brown, microxyln, dense, LS: cream, chky, lithographic in part, Chert: semi trans, to white,

Chert: dark brown, LS: dark brown, microxyln, very dense, LS: tan/brown, microxyln, very dense

LS: cream, finexyln, shaley, Shale: black to gray, pyritic, LS: dark gray, microxyln, dense, LS: cream, finexyln, friable in parrt.

Shale: black carboniferous, LS: cream, finexyln, LS: dark gray/brown, microxyln, very dense, cherty in part, sct random fossile fragments.

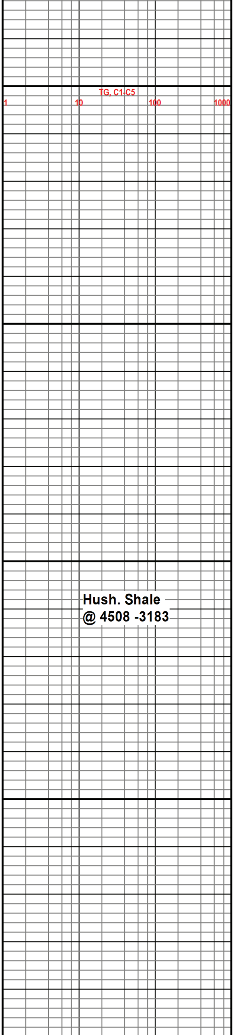
Shale: black, LS: cream, chky,

LS: brown, microxyln, dense, Shale: gray, LS: gray/brown, microxyln, dense

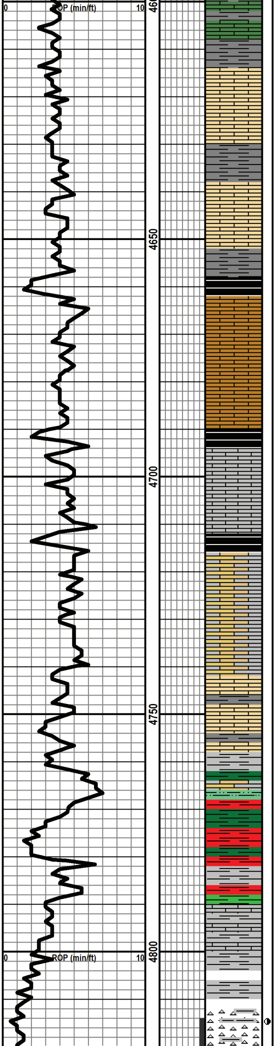
Shale: dark gray, LS: gray/buff, microxyln, dense, Chert: semi translucent, LS: light brown, microxyln with no to poor interxyln porosity, sct slight visable oolmoldic porosity, no show

Shale: black to dark gray with LS: brown, microxyln, very dense, Chert: brown, sharp

Shale: light green, LS: light green, microxyln, very dense, Chert: dark gray, Shale: gray, Chert: black, SD. STN: brown to light gray, fine grain, dense, no show, no fluoresence,



Hush. Shale
@ 4508 -3183



LS: blue green, microxyln, dense, with Chert: blue green, LS: buff, microyxln, very dense, LS: tan, microxyln, very densen with fossile fragments, Chert: dark brown,

LS: whit echky, LS: buff to tan, microxyln, very dense, no visable porosity, mineral fluoresence, Shale: gray, Chert: smlky, Shale: black

Shale: gray, blocky, LS: cream to buff and gray, medium brown, microxyln, cherty, no visable porosity

Shale: black carb, LS: carmel brown, microxyln, very dense, LS: bone/cream, microxyln, very dense,

LS: brown, microxyln, slightly cryptoxyln, very dense, LS: buff, poor interxyln porosity, Shale: black

LS: light gray to light brown, poor interxyln porosity, sct porosity streaks, friable in part, mineral fluoresence, no odor no hydrocarbon show. Shale: black, dense, lithographic, fossile packstone

LS: gray/cream, finexyln, poor interxyln porosity, Shale: light brown, foss, Shale: gray.

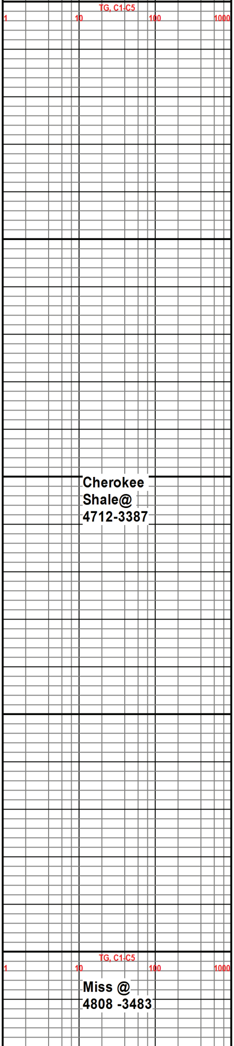
LS: buff to cream to brown light green waxey in part, microxyln, dense, shale: black to gray.

Shale: yellow/green and or silty light green in part, LS: gray/cream, finexyln, poor interxyln porosity

Shale: varied colored, LS: white, chky

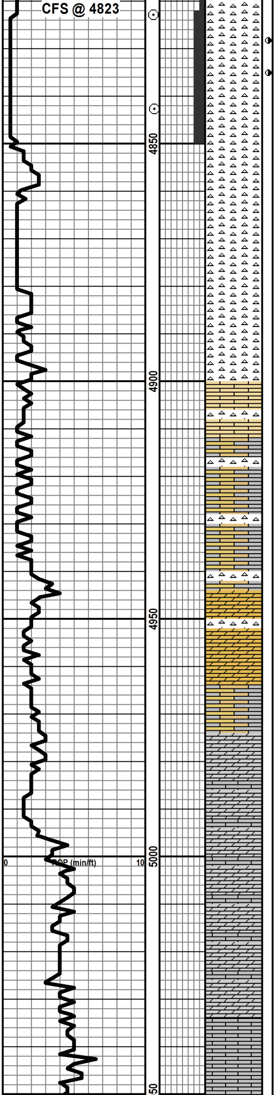
Shale: varied colored, LS: gray, microxyln, dense, no visable porosity

4823 30 min cir: Chert: white, fresh, semi clear in part, sct lsight stain, poor fluroesence, no show off free oil, questionable odor from sample, slightly



Cherokee Shale@ 4712-3387

Miss @ 4808 -3483



dolomitic, sct slight visable tripolitic porosity,

4823 60 min cir: Chert A.A. no odor, slight increase in tripolitic porosity, one piece of bright fluoresence, with strong cut.

4843 30 min cir: Chert: white, fair to good tripolitc porosity, sct pin point black stain, rainbow oil show to even edge stain, poor fluoresence, oil scum around rim of sample cup,

Chert: fresh, white, slight tripolitic porosity, white/light brown, poor fluoresence

Chert: porcelain white, dull yellow fluoresence, Shale: black

LS: white/cream, finexyln, poor interxyln porosity, cherty

Chert: dove gray, semi trans, LS: dirty brown/gray, fine granular, slightly dolomitic, no show, no fluoresence,

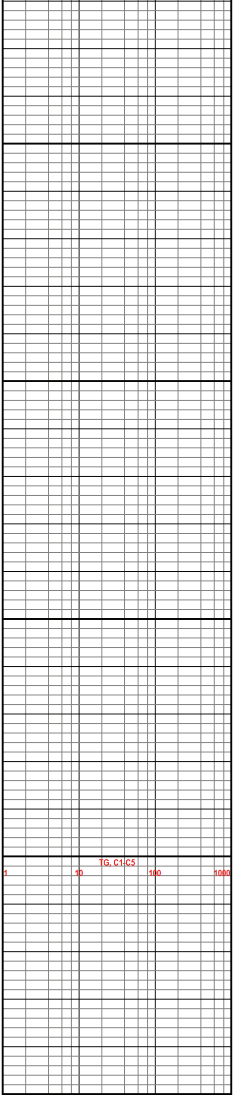
Chert: dove gray, lmy, Dolomite: dirty brown, fine granular, no show,

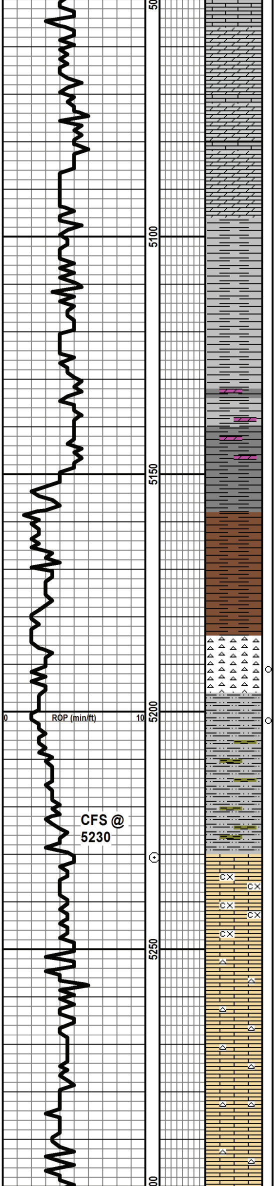
Shale: varied colored, Dolomite: gray, cherty, fine granular, no show,

Chert: dark gray, sharp, Dolomite: dirty gray, poor intergranular porosity, no fluoresence, LS: gray, microxyln, dense, Shale: gray, gritty

Dolomite: dark gray, very fine granular, poor intergranular porosity, no show

LS: dirty gray, microxyln, very dense, cherty





Dolomite: gray, very fine granular, poor intergranular porosity, Shale: gray

Shale: gray/green moot, Dolomite: gray very fine granular, Shale: gray to red

Kinderhook
Shale @
5095 -3771

Shale: gray

Shale: gray and or dark gray, Dolomite: gray, fine granular

Shale: brown with fluoresence spores

Chat Shale
@5160 -3835

Shale: brown grading into redish brown

Chert: very dark black, sharp dense with pyritic streaks,dull orange fluoresence, black shale, sct droplets of free oil,

Siltstone: chky in part, sct spotty fluoresence, random show of free oil in sample tray

TG, C1-C5
1 10 100 1000

Silstone: gray, no show

5230 30 min: Silstone: light gray, calcareous, gummy in part, no show, poor interxyln porosity, sct rainbow show when chrushed, no odor,

5230 60 min: no odor, Siltstone A. A. , no fluoresence, no show of free oil

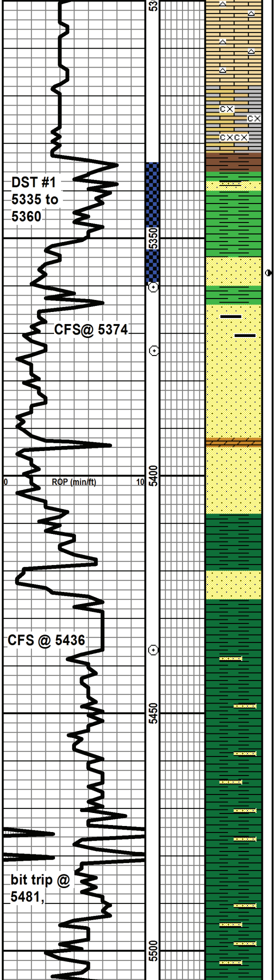
Viola @
5236 -3911

LS: off white, coarsexyln, friable, slightly cryptoxyln, no show, no fluoresence,

LS: cream, finexyln to coarsexyln, poor interxyln porosity, LS: cream/white, subchky, friable

LS; buff/ brown, finexyln, poor interxyln porosity, cherty, no show

Chert: gray/brown, sharp, LS: cream/brown, finexyln, poor interxyln porosity, LS: cream/gray brown, finexyln, mott, friable in part,



Chert: light brown, sharp, LS: light brown, finexyln, poor interxyln porosity,

LS: cream/buff, coarsexyln, friable in part, no show, LS: brown, microxyln, very dense, lithographic, included quartz grains.

LS: cream/gray, coarsexyln, friable in part, Shale: blue green, Sd. STN: blue gray, poorly sorted, tight shaley no show.

Shale: green to gray/green, rare included quarts grains, Sd. STN: one quartz cluster fine grain, no show.

5360 60 min. cir sample: Sd. STN: fine grain, poorly sorted, poor intergranular porosity, spotted bright fluoresence, slight show of free oil under black light. normal light.

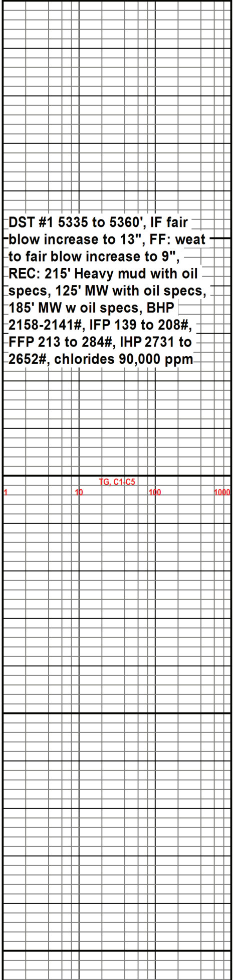
5374 30 min, cir sample: Sd. stn.: clear grained, fine grained, sub angular, clean, pure sand STN., Shale: gray, no fluor. from sample, 5374 60 min: Sd. STN: clear grained, fine grained, sub angular, friable, good intergranular porosity, sct. oil show of free light brown, lazey oil, gas bub. when chrushed no fluor. no odor, SD. STN: light brown, fine granular dolomitic, friable, poor intergranular porosity, sct show of free oil when chrushed, 5374 75 min cir sample: SD. STN: clear to white, fine

5374 75 min cir sample: SD. STN: clear to white, fine grain, poorly sorted, friable, no fluoresence, decrease in oil show to no oil show.

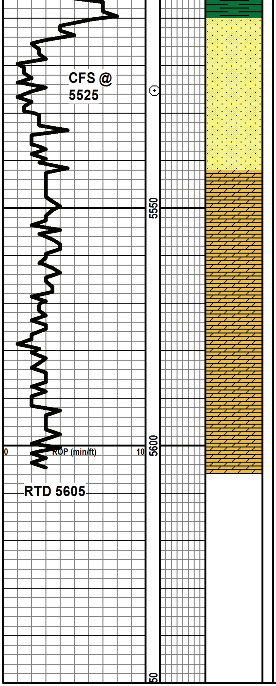
Shale: green to gray/green dolomitic in part, with sandy lenses, Chert: dark, blocky, Siltstone: brown, dolomitic,

Shale: green waxey

SD. STN: light gray to light brown, fine grain, very dense, Shale: green with pyritic lenses.



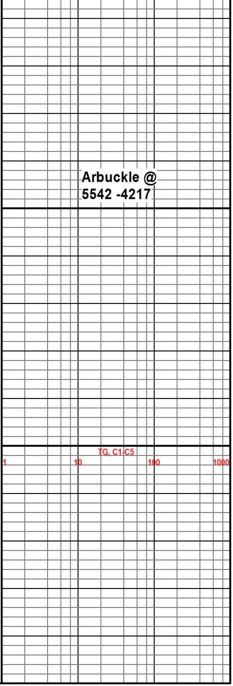
DST #1 5335 to 5360', IF fair blow increase to 13", FF: weat to fair blow increase to 9", REC: 215' Heavy mud with oil specs, 125' MW with oil specs, 185' MW w oil specs, BHP 2158-2141#, IFP 139 to 208#, FFP 213 to 284#, IHP 2731 to 2652#, chlorides 90,000 ppm



SD. STN: fine grain, light gray to light brown, dolomitic in part very dense in part, poor intergranular porosity, no show, grading intomedium grained, rounded poorly sorted clusters, no show, Shale: green

SD. STN: medium grained, friable, random slight stain, slight show of free oil when chrushed, no odor, mostly barren SD. STN clusters no show,

Dolomite: brown to brown/gray, fine granular, no to poor visable porosity, very dense in part no show,

Dolomite: brown, very fine granular, poor intergranular porosity, mineral fluoresence.