

# LITHOLOGY STRIP LOG

## WellSight Systems

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

Well Name: Randel #1-19  
Location: 985' FNL & 1660' FEL, Sec. 19-T27S-R18W, Kiowa Co., KS.  
Licence Number: 15-097-21786-0000 Region: Einsel North  
Spud Date: 2/28/2014 Drilling Completed: 3/6/2014  
Surface Coordinates: 985' FNL & 1660' FEL, Sec. 19-T27S-R18W

Bottom Hole Same as above  
Coordinates:  
Ground Elevation (ft): 2193' K.B. Elevation (ft): 2206'  
Logged Interval (ft): 3900' To: 4920' Total Depth (ft): 4920'  
Formation: Kinderhook at Total Depth  
Type of Drilling Fluid: Freshwater/Gel to 2976'; Chemical Gel 2976' to 4920'

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

### GEOLOGIST

Name: Jon D. Christensen  
Company: Consulting Petroleum Geologist  
Address: 9002 W. Silver Hollow St.  
Wichita, KS. 67205-8856

### Cores

None Taken

### DSTs

DST #1(Mississippi Chert) 4736' -4793' Test Times 15"-45"-60"-120" IFP Strong Blow BOB/6", FFP Gas to Surface in 41"(Burns brite yellow flame) Max. 17# on 0.375" Choke = 115 MCFG in 60" of FFP - Still building; REC: 4366' Gas in Pipe, 124' GCM(15%G, 85%M), 62' GCMW(10%G, 30%M, 60%W), 174' SW, CI 85,000, Mud 3000; IFP 33-90#, ISIP 1489#, FFP 69-166#, FSIP 1490#, IHP 2610#, FHP 2376#, BHT 127 Deg. F.

## Comments

2/28/14 MIRU Sterling Drilling Rig #5 Spud at 6:45 PM; 3/1/14 TD. 608' - CTCH to set 8 5/8" Surface Casing; 3/2/14 Drilling at 1192'; 3/3/14 Drilling at 2900'; 3/4/14 TD. 4219' - CFS; 3/5/14 TD. 4793' - CFS; 3/6/14 RTD. 4920' at 1:40 AM. - Rigging up for Logging(Halliburton); 3/7/14 RTD. 4920'/LTD. 4921' - Circulating 5 1/2" Production Casing.

Set new 8 5/8"(23#) Surface Casing at 605' with 350 sacks of cement(Basic Energy Services). Cement did Circulate. PD. 10:15 AM. 3/1/14.

Set new 5 1/2" (15.5#) Production Casing at 4911' with 200 sacks of "Loeb Blend" cement(Basic Energy Services). PD. 7:45 AM. 3/7/14.


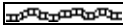
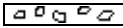










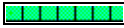

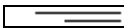
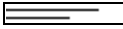



Surveys: 0.25 Deg. at 608'(Surface Casing); 1.0 Deg. at 4793'(DST #1); 0.50 Deg. at 4920' RTD.

Pipe Strap at 4793'(DST #1): Strap 0.14' Long to the Board, no correction made to the Board.








































































After review of the Halliburton Logs, DST data and positive indications of commercial amounts of recoverable hydrocarbons, the operator elected to set new 5 1/2" Production Casing for completion in the Mississippi Chert.

LOG TOPS: Chase 2444(-238), Stotler Lmst. 3398(-1192), Howard 3600(-1394), Queen Hill Shale 3906(-1700), Heebner Shale 4040(-1834), Toronto 4056(-1850), Brown Lmst. 4190(-1984), Lansing 'A' 4198(-1992), Lansing/KC 'H' 4360(-2154), KC 'I' 4413(-2207), Stark Shale 4498(-2292), Hertha 4546(-2340), Base Kansas City 4580(-2374), Marmaton 4625(-2419), Pawnee 4672(-2466), Cherokee Shale 4710(-2504), Miss. Chert 4767(-2561), Basal Miss. Lmst. 4824(-2618), Kinderhook Shale 4845(-2639), Kinderhook Sand 4876(-2670).

## ROCK TYPES

 Anhy  Bent  Brec  Cht	 Clyst  Coal  Congl  Dol	 Gyp  Igne  Lmst  Meta	 Mrlst  Salt  Shale  Shcol	 Shgy  Sltst  Ss  Till
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## ACCESSORIES

<b>MINERAL</b>  Anhy  Arggrn  Arg  Bent  Bit  Brecfrag  Calc  Carb  Chtdk  Chtlt  Dol  Feldspar  Ferrpel  Ferr  Glau	 Gyp  Hvymin  Kaol  Marl  Minxl  Nodule  Phos  Pyr  Salt  Sandy  Silt  Sil  Sulphur  Tuff	<b>FOSSIL</b>  Algae  Amph  Belm  Bioclst  Brach  Bryozoa  Cephal  Coral  Crin  Echin  Fish  Foram  Fossil  Gastro  Oolite	 Ostra  Pelec  Pellet  Pisolite  Plant  Strom  <b>STRINGER</b>  Anhy  Arg  Bent  Coal  Dol  Gyp  Ls  Mrst	 Sltstrg  Ssstrg  <b>TEXTURE</b>  Boundst  Chalky  Cryxln  Earthy  Finexln  Grainst  Lithogr  Microxln  Mudst  Packst  Wackest
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OTHER SYMBOLS

- POROSITY**  
 [E] Earthy  
 [F] Fenest  
 [X] Fracture  
 [M] Inter  
 [O] Moldic  
 [P] Organic  
 [P] Pinpoint

- [V] Vuggy  
**SORTING**  
 [W] Well  
 [M] Moderate  
 [P] Poor

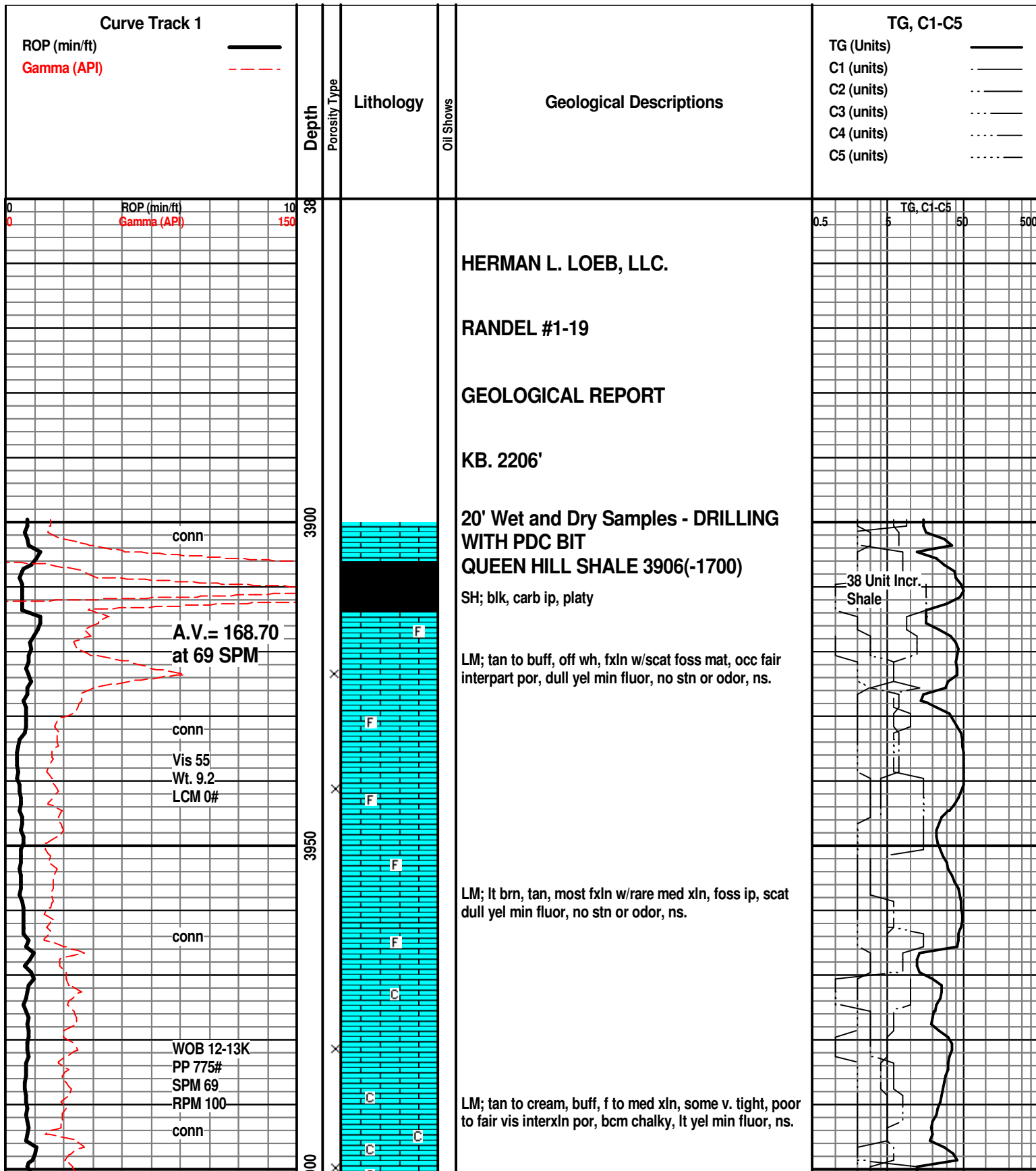
- ROUNDING**  
 [R] Rounded  
 [r] Subrnd  
 [a] Subang  
 [A] Angular

- [S] Spotted  
 [Q] Ques  
 [D] Dead

- EVENT**  
 [Rft] Rft  
 [Sd] Sidewall

- INTERVAL**  
 [C] Core  
 [D] Dst

- OIL SHOW**  
 [E] Even



Curve Track 1

ROP (min/ft)  
 Gamma (API)

ROP (min/ft)  
 Gamma (API)

TG, C1-C5

TG (Units)  
 C1 (units)  
 C2 (units)  
 C3 (units)  
 C4 (units)  
 C5 (units)

ROP (min/ft)  
 Gamma (API)

TG, C1-C5

HERMAN L. LOEB, LLC.

RANDEL #1-19

GEOLOGICAL REPORT

KB. 2206'

20' Wet and Dry Samples - DRILLING WITH PDC BIT  
 QUEEN HILL SHALE 3906(-1700)

SH; blk, carb ip, platy

LM; tan to buff, off wh, fxln w/scat foss mat, occ fair interpart por, dull yel min fluor, no stn or odor, ns.

LM; lt brn, tan, most fxln w/rare med xln, foss ip, scat dull yel min fluor, no stn or odor, ns.

LM; tan to cream, buff, f to med xln, some v. tight, poor to fair vis interxln por, bcm chalky, lt yel min fluor, ns.

A.V.= 168.70  
 at 69 SPM

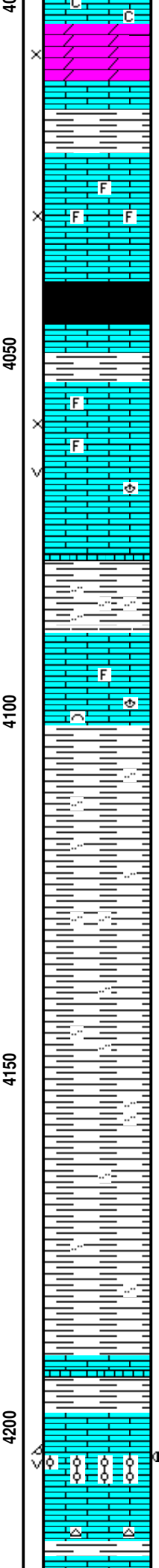
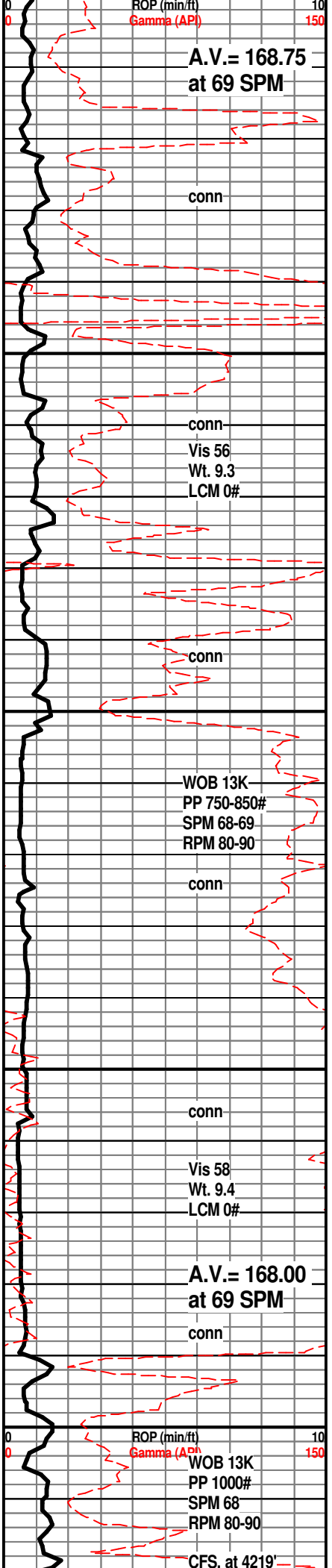
conn  
 Vis 55  
 Wt. 9.2  
 LCM 0#

conn

WOB 12-13K  
 PP 775#  
 SPM 69  
 RPM 100

conn

38 Unit Incr.  
 Shale



DOL; tan to lt brn, sucrosic, fair interxn por, lt yel min fluor, ns.

SH; med to dk gy, platy

LM; wh, off wh, buff, foss ip, scat f to med xln lmst, trc poor interxn por, lt yel min fluor, ns.

**HEEBNER SHALE 4040(-1835)**  
SH; blk, carb ip, platy  
LM; med brn, hd, blocky, scat pyr

**TORONTO 4056(-1850)**  
LM; off wh, tan, fxln w/scat foss mat, occ vug por w/cse calc xtals, chalky ip, lt yel min fluor, no stn, ns.  
Lm; off wh, tan, foss ip, some dense, minor chalky mtx, lt yel min fluor, no stn or odor, no gas kick, ns.

**DOUGLAS SHALE 4079(-1873)**  
SH; med gy, grn, platy, occ silty

**40 Stand Wiper Trip at 4092'**  
LM; med to dk brn, gy brn, foss, hd

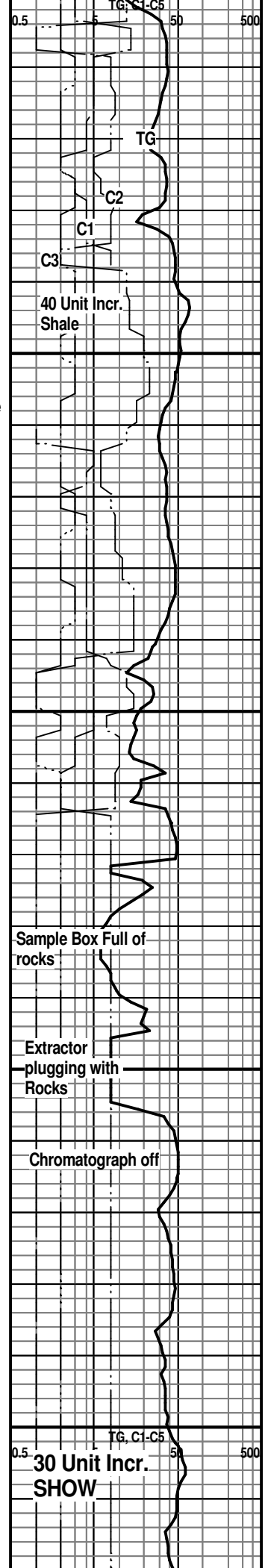
SH; lt to med gy, trc rust red/brn, platy, occ silty

SH; lt to med gy, firm, silty ip.

SH; lt to med gy, platy, firm

**BROWN LMST. 4190(-1984)**  
LM; med to dk brn, hd, blocky

**LANSING 'A' 4198(-1992)**  
LM; lt brn, foss - oolitic, med to occ lrg molds, gd oomoldic por, trc small vug por, spotted lt brn oil stain, faint odor, few gas bubbles, med/occ brite yel fluor, some barren por.  
LM; tan to lt brn, hd, scat cht, tite



MudCo. Mud  
Check at 4220'  
Vis 54 Wt. 9.4  
WL 9.0 Cl 5000  
PH 11.5 LCM 0#

WOB 13-14K  
PP 1000#  
SPM 68-69  
RPM 80-90

A.V.= 168.00  
at 69 SPM

conn  
Vis 48  
Wt. 9.4  
LCM 0#

WOB 14K  
PP 1000#  
SPM 69  
RPM 80-85

Vis 58  
Wt. 9.4  
LCM 0#

ROP (min/ft)  
Gamma (API)

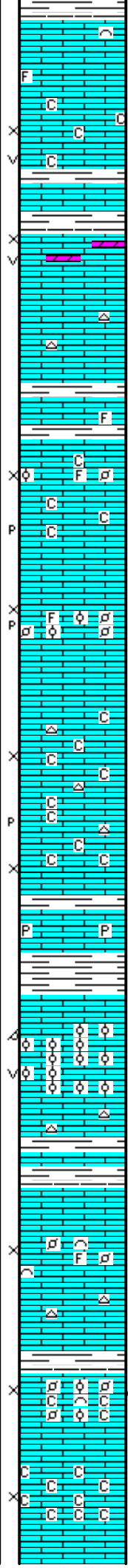
CFS. at 4422'  
WOB 14-16K  
PP 1000#  
SPM 66  
RPM 80-85

4250

4300

4350

4400



### LANSING 'B' 4223(-2017)

LM; tan to lt brn, hd, rare foss, blocky, tite

LM; off wh, lt gy, fxln w/scat vug por, minor chalky mtx, lt yel min fluor, no vis stn, no odor, ns.

LM; tan to lt brn, fxln w/occ sucrosic test - partly dolomitic, fair interxln w/occ vug por, lt yel fluor, no stn or odor, ns.

LM; med brn, hd, blocky, scat pyr, rare gy cht

SH; grn, gy grn, platy

LM; tan to lt brn, foss ip, fair interpart por, minor chalky mtx, lt to dull yel min fluor, no stn or odor, ns.

LM; tan to lt brn, foss w/scat pellets - ooids, scat interpart w/occ p-p por, dull yel to no fluor, no stn or odor, ns.

LM; off wh, buff, tan, fxln w/scat fair interxln w/p-p por, chalky - soft ip, occ wh/off wh foss cht, dull yel min fluor, no stn or odor, ns.

LM; wh, off wh, med to cse xln, abnt spar calc, chalky ip, fair interxln por, no fluor, ns.

SH; med gy, trc dk gy - blk, platy

### LANSING/KC. 'H' 4360(-2154)

LM; tan to lt brn, oolitic, med to occ lrg molds, v. gd oomoldic por, rare vug por, brittle ip, med yel min fluor, no stn or odor, no gas kick, ns.

LM; lt to med brn, hd, blocky, scat gy cht

SH; med gy, gy grn, platy

LM; tan to lt brn, foss - finely pelletal, scat foss hash, poor interpart por, dull yel min fluor, no stn or odor, interbdd off wh/gy cht, ns.

### KANSAS CITY 'I' 4413(-2207)

LM; wh, off wh, highly foss w/ooids and pellets, occ foss hash, fair interpart por, scat chalk and chalky mtx, trc lt brn oil stn, no odor,

LM; off wh, wh, fxln w/much soft chalk and chalky mtx, trc poor interxln por, no fluor, no stn or odor, ns.

Gas Test at  
Extractor

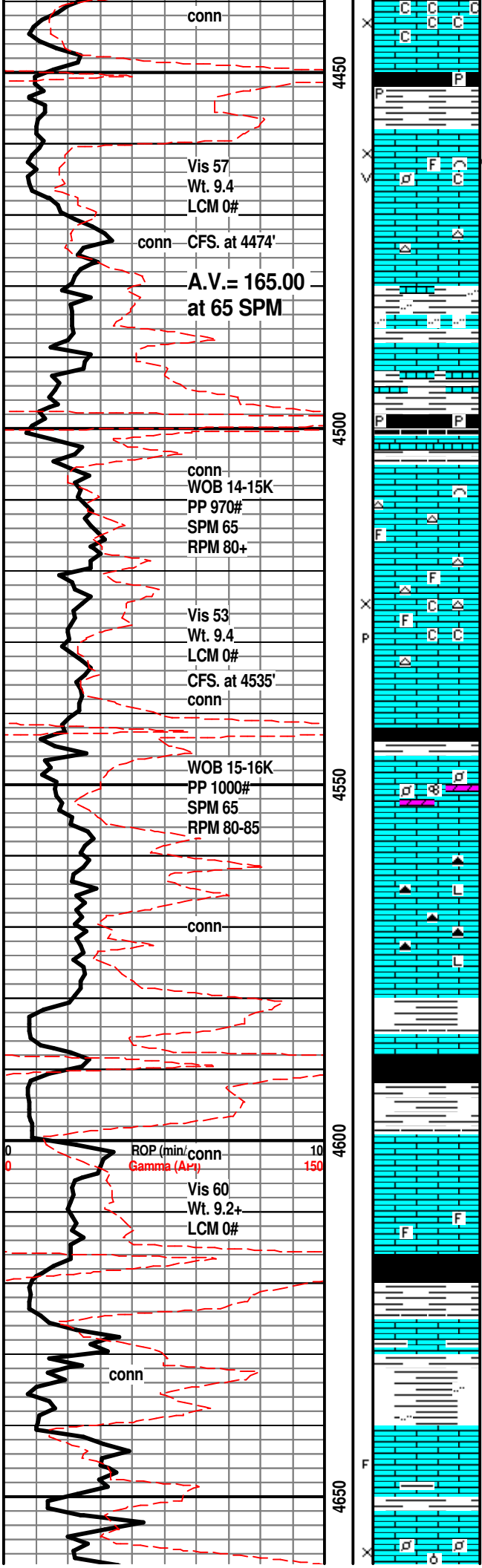
C1  
C2  
C4  
TG

Replace  
Chromatograph  
Filament -  
Calibrate HW also

0.5 5 15 50 100

10 Unit Incr.

5 Unit Incr.



LM; off wh, lt gy, fxln, poor interxln por, chalky mtx, dull yel min fluor, no stn, ns.

SH; dk gy, blk, pyr ip, platy

**KANSAS CITY 'J' 4460(-2254)**

LM; tan to lt brn, buff, fxln to sucrosic, partly dolomitic, rarely foss, fair to occ gd interxln w/rare small vug por, scat lt yel fluor, v. faint odor, trc. lt brn oil stn, most barren porosity, no cut - very poor to no sample show

LM; med brn, blocky, occ gritty-silty text, dense

SH; med to dk gy brn, lmy ip w/interbdd argil lmst, firm

**STARK SHALE 4498(-2292)**

SH; blk, carb, pyr ip.

**SWOPE 4505(-2299)**

LM; lt gy, off wh, foss ip, most well cem, minor chalky mtx, interbdd gy to off wh cht, no vis por, no fluor, ns.

LM; off wh, lt gy, tan, fxln w/rare foss mat, trc poor interxln w/sparse p-p por, minor chalky mtx, dull yel to no fluor, no stn or odor, ns.

SH; blk, carb ip, platy

**HERTHA 4546(-2340)**

LM; tan to lt brn, foss w/scat small pellets, poor to fair interpart por, trc lt brn dolomitic lmst, no fluor, no stn or odor, ns.

LM; med to dk brn, hd, litho, scat blk to smoky cht, tite

**BASE KANSAS CITY 4580(-2374)**

SH; grn, gy grn, rust red - some varic, platy

SH; med to dk gy, grn, rare blk, silty ip.

**PLEASANTON 4599(-2393)**

LM; med brn, hd, micritic, tite

LM; tan to lt gy, fxln w/rare foss mat, well cem, no vis por, ns.

SH; dk gy, trc blk, platy

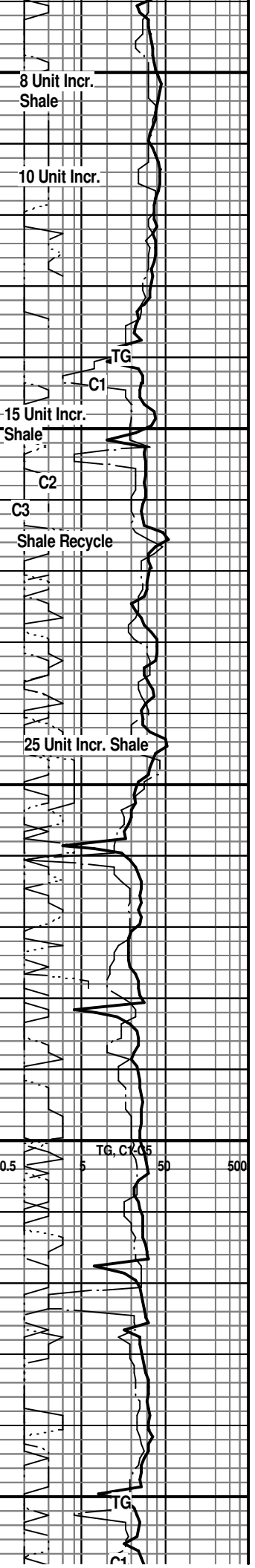
**MARMATON 4625(-2419)**

LM; lt brn, occ pale grn tint, argil ip, hd

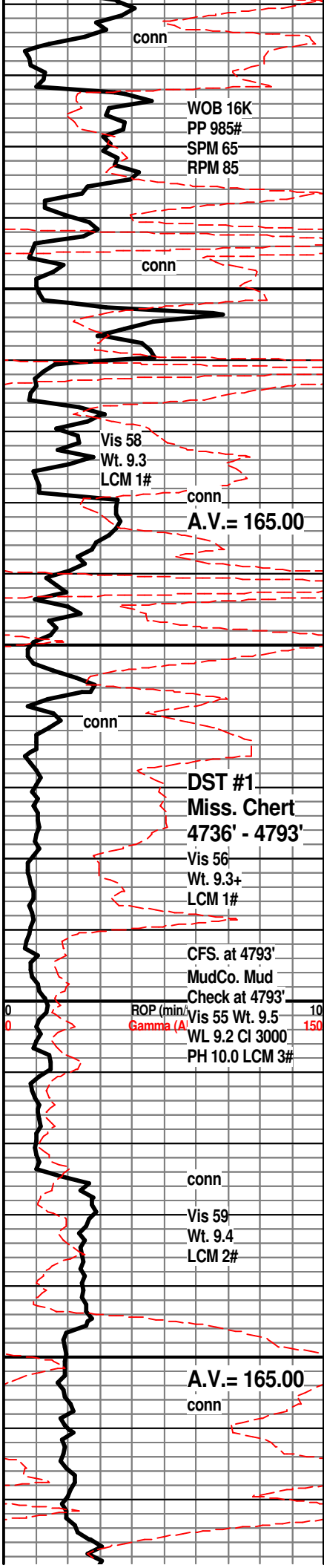
SH; red brn, rust red, med gy, gy grn, platy, occ silty

LM; lt brn, tan, fxln w/trc frags, spotty med yel fluor, no vis oil stn, no odor, no gas kick

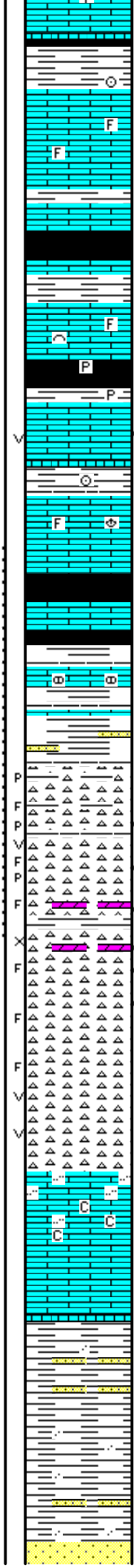
LM; lt brn, foss ip, scat well cem pellets/ooids, trc poor interpart por. most hd. rare lt vel fluor. no vis stn. ns.







4700  
4750  
4800  
4850



SH; med to dk gy, trc blk, platy  
**PAWNEE 4672(-2466)**

LM; tan to buff, off wh, fxln w/rare foss mat, hd, no vis por, no fluor, ns.

SH; blk, gassy w/gas odor, carb

LM; off wh, tan, v. hd, blocky, rare foss mat - well cem, spotty lt yel min fluor, odor, trc blk tar/dead oil stn

**CHEROKEE SHALE 4710(-2504)**

SH; blk, dk gy, platy, pyr ip.  
LM; off wh, lt to med brn, few pcs w/vug por, dk brn hvy oil stn, spotty lt yel fluor, no live oil, scat dk brn/blk residual oil

**15 Stand Wiper Trip at 4729'**

LM; tan to lt brn, foss ip, hd, blocky, no vis por, v. dull yel min fluor, no stn or odor, ns.

SH; med gy, trc blk, platy

LM; lt gy, lt gy brn, fxln, most dense, blocky, dull yel fluor, no vis stn, no gas kick

SH; varic, some nodular rnd lmst

LM; lt to med brn, dense, blocky, nodular ip.

SH; varic, platy to flakey, trc vf gr qtz ss

**MISSISSIPPI CHERT 4767(-2561)**

CHT; wh, off wh, fresh and trip, much blk tar/dead oil stn, fair gas odor, fracs w/fair p-p por, some lt brn spotted live stn, gas bubbles, grn silty sh interbdd w/cht

CHT; wh, off wh, some org/brn, fresh and trip, fracs w/edge stn, p-p and small vug por, fair gassy odor, spotted/even brite yel fluor, SSFO, gas bubbles, interbdd sucrosic dolomite w/fair med yel fluor, gd cut on select pcs, few pcs of oil saturated cht w/gd p-p por

**DST #1(Miss. Chert) 4736' - 4793'**

CHT; wh, most fresh - sharp, scat fracs, occ spotted lt brn edge stn, decr. show, v. faint odor, rare med yel fluor

CHT; wh, off wh, fresh, few fracs w/occ vug por, no stn, no odor, no fluor

LM; rust red, red brn, off wh, oxidized, occ cse xln, minor chalky mtx, interbdd red/brn silty to gritty lmst, no vis por, no fluor, ns.

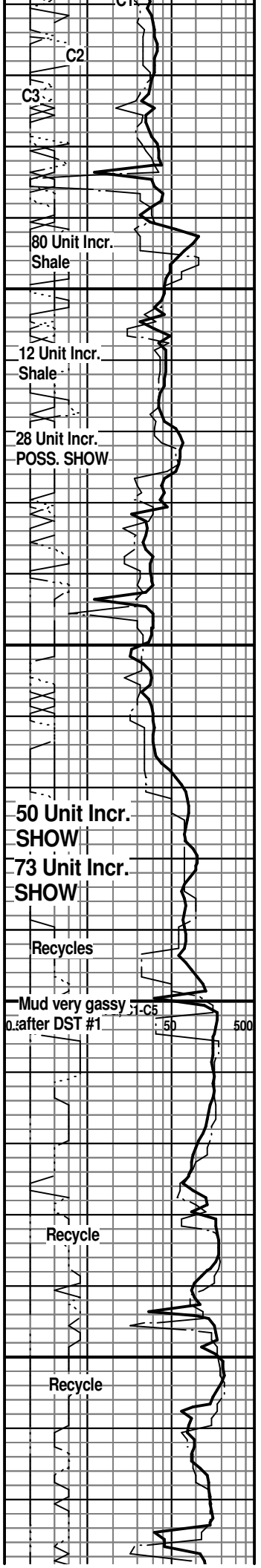
LM; red brn, rare pink, off wh, bcm more massive bdd, micritic, tite

**KINDERHOOK SHALE 4845(-2639)**

SH; med gy grn, platy, interbdd vf gr qtz ss strngs

SH; med gy, gy grn, sand ip w/rare interbdd vf gr ss strngs

**KINDERHOOK SAND 4876(-2670)**



WOB 14-15K  
conn - PP 975#  
SPM 65  
RPM 85  
Vis 57  
Wt. 9.4  
LCM 2#

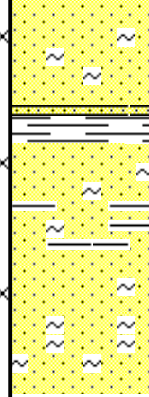
CFS. at 4920' RTD.

MudCo. Mud  
Check at 4920'  
Vis 64 Wt. 9.4  
WL 9.2 Cl 4000  
PH 10.5 LCM 2#

4900

4950

00



SS; clr to wh, pale grn tint, most f gr qtz, clusters, fri ip w/fair intergran por, scat grn glau/chlor, no fluor, no vis stn, no odor, no cut

SS; clr, wh, lt gy, f gr qtz, clusters, some well cem - partly qtzitic, glau/chlor, well srt, argil ip, no vis stn, no fluor, barren, ns.

SS; wh, clr, lt gy, f gr qtz, clusters, abnt grn glau/chlor, some chalky mat, no fluor, ns.

RTD. 4920' at 1:40 AM. 3/6/14

LTD. 4921'

Halliburton "Triple Combo" including ACRT(DIL), NEU/DEN w/PE, Microlog, MRIL

