

LITHOLOGY STRIP LOG

WellSight Systems

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

Well Name: Unruh #5-33
Location: 2296' FNL & 1645' FWL, Sec. 33-T27S-R18W, Kiowa Co., KS.
Licence Number: 15-097-21818-00-00 Region: Einsel
Spud Date: 3/9/2015 Drilling Completed: 3/16/2015
Surface Coordinates: 2296' FNL & 1645' FWL, Sec. 33-T27S-R18W

Bottom Hole Same as Above
Coordinates:
Ground Elevation (ft): 2198' K.B. Elevation (ft): 2207'
Logged Interval (ft): 3900' To: 4823' Total Depth (ft): 4823'
Formation: Kinderhook Shale at Total Depth
Type of Drilling Fluid: Freshwater/Gel to 3383'; Chemical Gel 3383' to 4823'

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

OPERATOR

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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(Kansas City 'I' Zone) 4398' - 4417'(Depths Corrected to Log) Test Times 15"-45"-45"-90" IFP Strong Blow BOB/6.5 Min, FFP Strong Blow BOB/5 Min., no Gas to Surface, 2" Blowback on FSI; REC: 960' Gas in Pipe, 62' GOCM(24%G, 14%O, 62%M), 124' GM&OCW(30%G, 24%O, 39%W, 7%M) CI 76,000, Mud 5000; IFP 30-45#, ISIP 1214#, FFP 64-87#, FSIP 1222#, IHP 2168#, FHP 2104#, BHT 120 Deg. F.

DST #2(Cherokee - Miss. Chert) 4740' - 4796'(Depths Corrected to Log) Test Times 15"-45"-45"-90" IFP Strong Blow BOB/20 Sec., BOB Blowback in ISI, FFP Strong Blow, Gas to Surface in 21 Min., Volume To Small to Measure(Gas Burns OK), BOB Blowback on FSI; REC: 30' Drlg. Mud, no oil, no water; IFP 33-35#, ISIP 503#, FFP 24-28#, FSIP 93#, IHP 2377#, FHP 2371#, BHT 124 Deg. F(NOTE: Shut-in tool may have failed during ISIP, FSIP may not be valid).

Comments

3/9/15 MIRU Sterling Drilling Co. Rig #4, Spud at 6:45 PM.; 3/10/15 TD. 550' - Setting 8 5/8" Surface Casing; 3/11/15 Drilling at 1675'; 3/12/15 Drilling at 3190'; 3/13/15 TD. 4216' - Bit Trip; 3/14/15 TD. 4423' - TOH for DST #1; 3/15/15 Drilling at 4625'; 3/16/15 TD. 4804' - DST #2, Reached Total Depth of 4823' at 2:07 PM., LTD. 4815'; 3/17/15 LTD. 4815' - LDDP for setting 5 1/2" Production Casing.

Set new 8 5/8"(23#) Surface Casing at 547' KB. with 400 sacks of cement(Basic Energy Services). Cement did Circulate. PD. at 8:30 AM. on 3/10/15.

Set new 5 1/2"(15.5#) Production Casing at 4814' KB. with 200 sacks of "Loeb Blend" cement(Basic Energy Services). PD. at 2:45 PM. on 3/17/15.

Surveys: 1.0 Deg. at 550'(Surface Casing); 0.75 Deg. at 4216'(Bit Trip); 0.50 Deg. at 4423'(DST #1); 0.25 Deg. at 4804'(DST #2).

Pipe Strap at 4210'(Bit Trip): Strap 5.40' Short to the Board, no correction made to the Board.


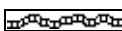
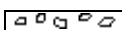

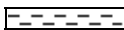

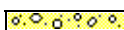





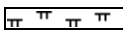

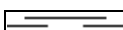



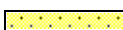
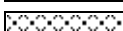
Pipe Strap at 4796'(DST #2): Strap 8.23' Short to the Board. We believe that the Strap is correct, the measurement error occurred while tallying the Drill Pipe on the racks.

After review of the Halliburton Logs, DST data, and sample shows, the operator elected to set new 5 1/2" Production Casing for completion in the Miss. Chert, Kansas City 'I' and Lansing 'B' zones.








































































LOG TOPS: Chase 2435(-228), Stotler Lmst. 3388(-1181), Howard 3587(-1380), Heebner Shale 4026(-1819), Toronto 4038(-1831), Brown Lmst. 4178(-1971), Lansing 'A' 4188(-1981), Lansing 'B' 4210(-2003), KC. 'I' 4407(-2200), Stark Shale 4495(-2288), Hertha 4556(-2349), Base Kansas City 4591(-2384), Marmaton 4632(-2425), Pawnee 4677(-2470), Cherokee Shale 4717(-2510), Reworked Miss. 4760(-2553), Clean Miss. Chert 4768(-2561), Kinderhook Shale 4812(-2605).

NOTE: This log was shifted upward by 5' to 8' for correlation purposes with the Halliburton logs. The pipe straps confirm that LTD. is correct, being from 5' to 8' short to the Board.

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

MINERAL  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	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  Cryxln  Earthy  Finexln  Grainst  Lithogr  Microxln  Mudst  Packst  Wackest
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OTHER SYMBOLS

- POROSITY**
- Earthy
 - Fenest
 - Fracture
 - Inter
 - Moldic
 - Organic
 - Pinpoint

Vuggy

- SORTING**
- Well
 - Moderate
 - Poor

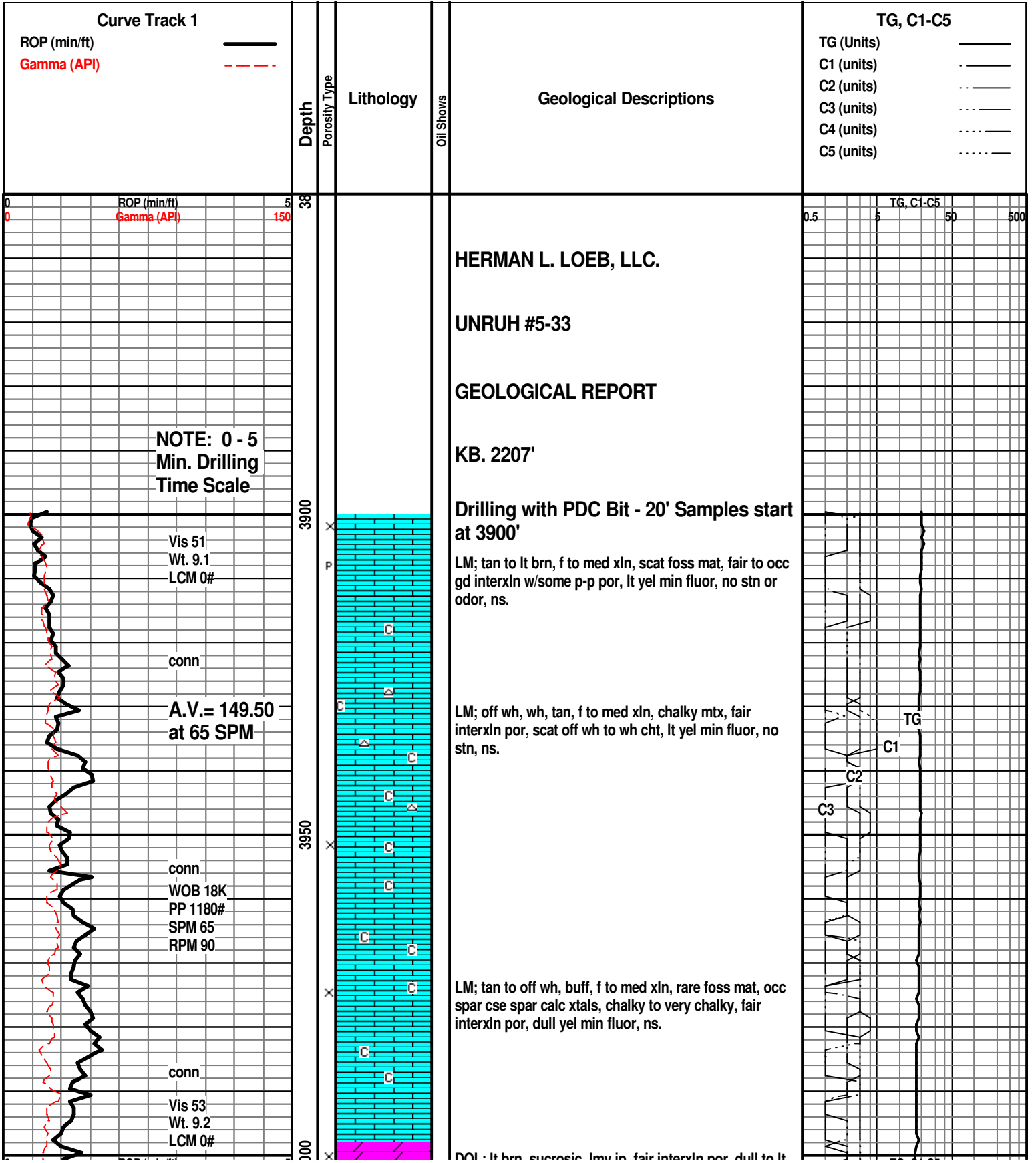
- ROUNDING**
- Rounded
 - Subrnd
 - Subang
 - Angular

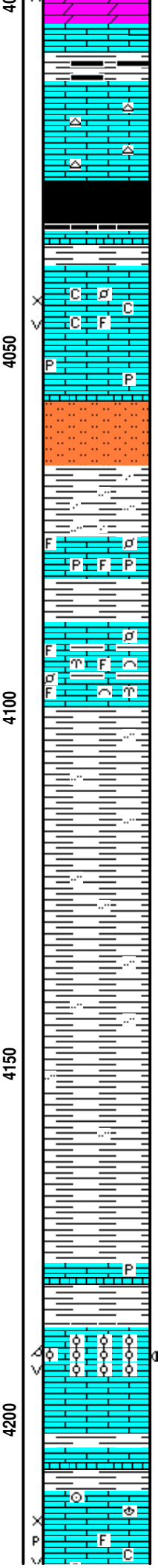
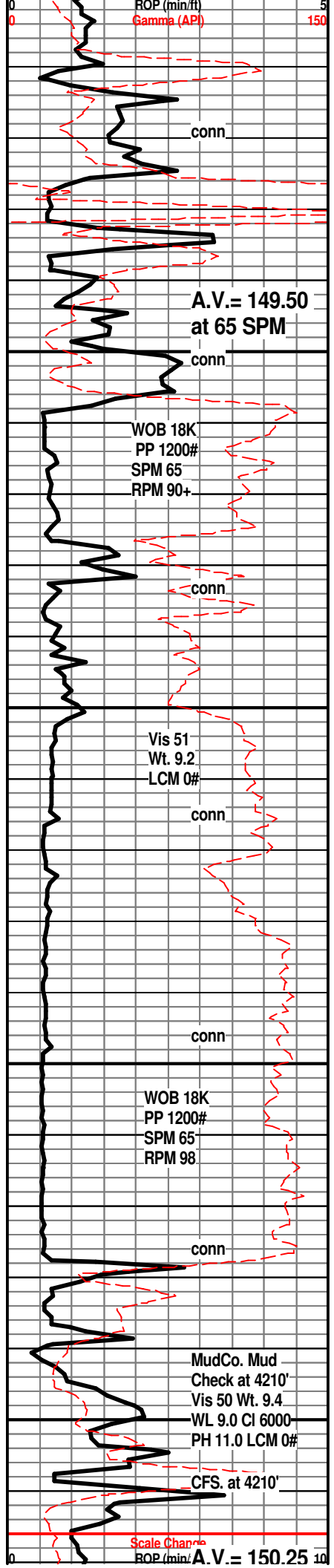
- Spotted
- Ques
- Dead

- EVENT**
- Rft
 - Sidewall

- INTERVAL**
- Core
 - Dst

- OIL SHOW**
- Even





DOE; lt brn, sacrositic, mly ip, fair interxln por, dull to it yel min fluor, no stn or odor, ns.

SH; med to dk gy, platy

LM; lt to med brn, hd, blocky, scat off wh/gy cht, no vis por, ns.

HEEBNER SHALE 4026(-1819)
 SH; blk, carb, platy
 LM; med brn, hd, blocky

TORONTO 4038(-1831)
 LM; tan to off wh, buff, foss w/most f to med xln, fair to occ gd interxln w/some vug por, occ spar calc xtals, minor chalky mtx, lt yel min fluor, no stn or odor, rare pyr, no gas kick

DOUGLAS SHALE 4057(-1850)
 SLTST; lt gy, sandy ip, occ mica

SH; lt to med gy, silty to occ sandy, firm

LM; med to dk brn, hd, foss, all well cem, occ pyr, tite

LM; med brn, foss, some w/much foss hash, interbdd argil lmst, lt yel min fluor, no stn, ns.

SH; lt to med gy, platy, occ silty, soft

SH; med gy, platy, firm, occ silty

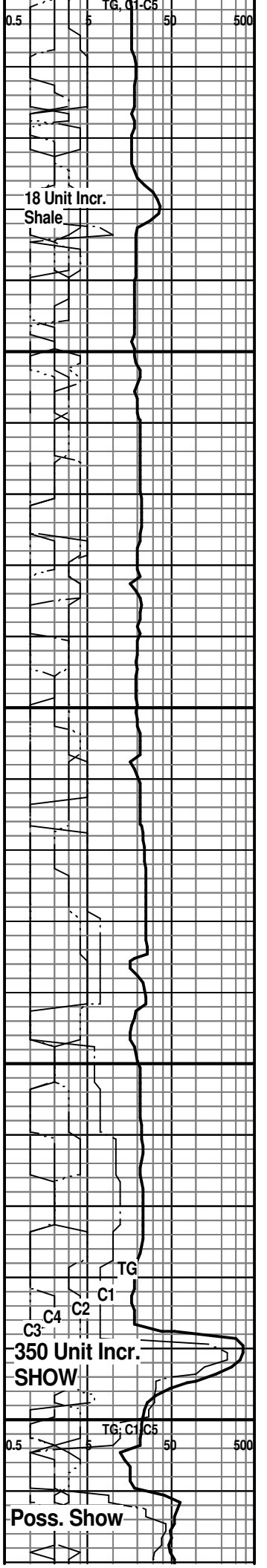
SH; med gy, firm, smooth, some flakey

BROWN LMST. 4178(-1971)
 LM; med to dk brn, dense, blocky, trc pyr

LANSING 'A' 4188(-1981)
 LM; tan to lt brn, oolitic, med to lrg molds, well dev oomoldic w/occ vug por, med yel fluor, gas bubbles, v. faint odor, trc spotted lt brn oil stn, some tite, pred. gas show

Bit Trip at 4210' - Drill deeper with Button Bit

LANSING 'B' 4210(-2003)
 LM; tan to off wh, fxln, scat foss mat, fair interxln w/some p-p por, chalky mtx ip, dull yel fluor, poss gas bubbles, no vis stn, no odor



Gamma (A) at 55 SPM 150

conn
WOB 40K
PP 1165#
SPM 53
RPM 72-75

conn
Vis 55
Wt. 9.3
LCM 0#

conn
WOB 42K
PP 1180#
SPM 55
RPM 71

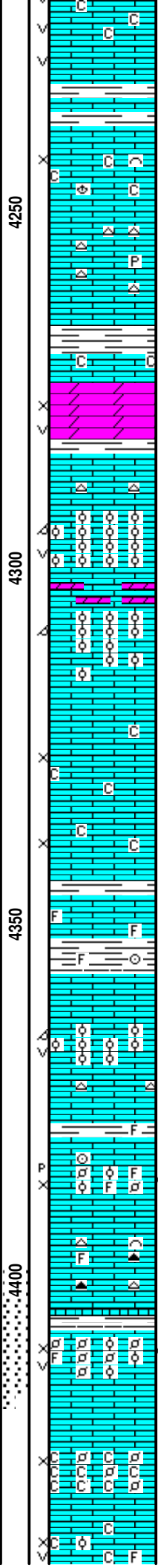
conn
Vis 54
Wt. 9.4+
LCM 0#

conn
WOB 42K
PP 1165#
SPM 55
RPM 70

A.V.= 150.50
at 55 SPM

ROP (min/ft) Gamma (A) 150

conn
DST #1
K.C. 'I' zone
4398' - 4417'
CFS. at 4417'
MudCo. Mud
Check at 4417'
Vis 72 Wt. 9.2
WL 8.8 CI 6000
PH 10.5 LCM 0#



LM; off wh, wh, lt gy, med xln, well dev. vug por, sev. gas bubbles, lt yel fluor, no vis oil stn, no odor - pred. gas show only

SH; med to dk gy, platy

LM; tan to buff, off wh, f to med xln, scat foss mat, partly chalky, fair interpart/interxln por, no fluor, no stn or odor, ns.

LM; med brn, micritic, scat pyr, occ gy/tan cht, tite

SH; med to dk gy, gy grn, platy

DOL; lt brn, lt gy, sucrosic, fair interxln w/vug por, med yel min fluor, no vis stn, no odor, ns.

LM; off wh, buff, f to med xln, scat wh cht, tite

LM; med brn, oolitic, med to lrg molds, brittle, most w/gd oomoldic por, occ vug por, med yel min fluor, no vis stn, no odor

LM; lt gy, lt brn, partly dolomitic, also med brn oomoldic lmst w/gd oomoldic por, occ cse spar calc xtals, med yel min fluor, no vis stn, no gas kick, barren

LM; off wh, lt gy, f to med xln, scat gd interxln por, some soft chalky mtz, rare spar calc xtals, scat lt yel min fluor, ns.

LM; med brn, foss ip, occ fair interpart por, ns.

LANSING/K.C. 'H' 4357(-2150)

LM; tan to lt brn, buff, oolitic, most small to med size molds, brittle, fair oomoldic w/some vug por, no fluor, no stn or odor, no gas kick

LM; lt brn, buff, scat gy cht, tite

SH; med to dk gy, platy, foss

LM; tan to cream, buff, foss w/scat small pellets/ooids, most well cem, poor interpart/p-p por, few pcs w/lt brn spotted stn, v. faint odor, looks tite

LM; tan to lt brn, scat foss mat, dense, interbdd amber to lt brn cht, no vis por, ns.

KANSAS CITY 'I' 4407(-2200)

LM; lt gy, lt brn, foss - finely pelletal, fair to gd interpart w/occ vug por, lt brn stn, SFO, few gas bubbles, gd odor, brite yel fluor, gd cut

DST #1: K.C. 'I' Zone 4398' - 4417' Corrected Depths to Log

LM; off wh, wh, fxln w/occ foss mat, much soft chalky and chalky mtz, poor interpart por, no fluor, no stn or odor, ns.

LM; tan, buff, foss ip, some fxln, fair interpart w/rare vug por, minor chalky mtz, no fluor, ns.

22 Unit Incr. Poss. Show

Recycle

Extractor off - readings unreliable

Change Extractor

Gas readings OK

3 Unit Incr.

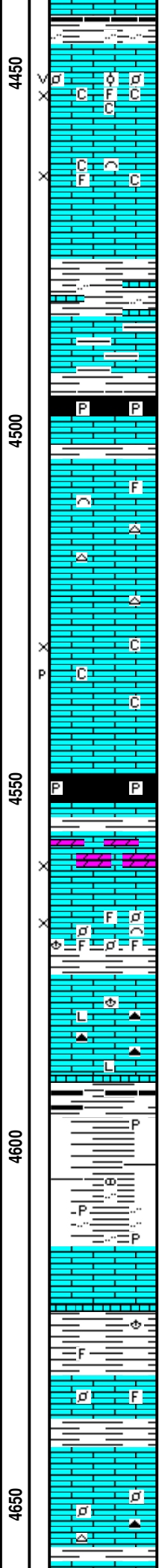
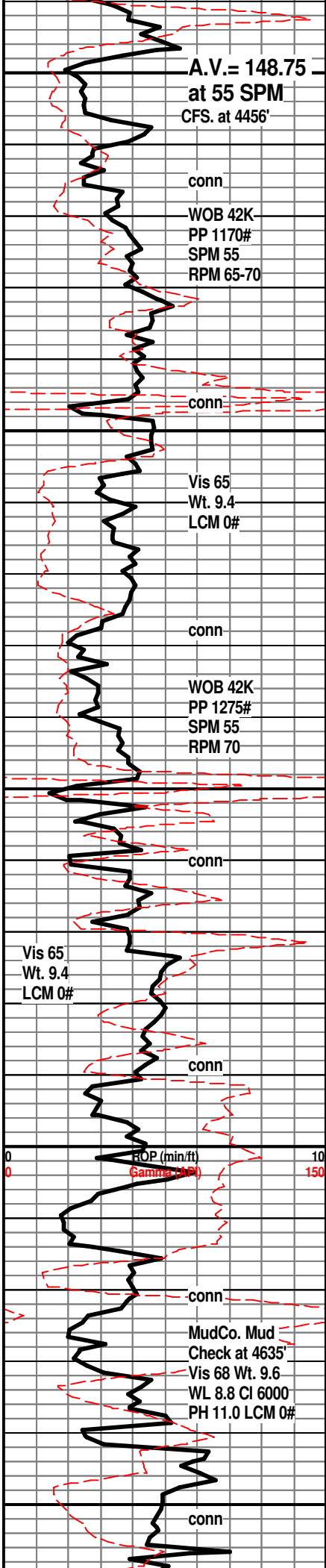
TG, C1-C5

20 Unit Incr. SHOW

B.U./Trip gas

Gas Test at Extractor

Boards B U



SH; dk gy, trc blk, gy grn, silty ip, platy
KANSAS CITY 'J' 4446(-2239)
 LM; tan to buff, foss w/scat pellets/ooids, soft chalky mtz, scat fair vug por, v. dull yel to no fluor, no vis stn, no odor, ns.

LM; tan to off wh, buff, fxln, rare foss mat, poor to fair interpart/interxln por, occ chalky mtz, no fluor, no stn or odor, ns.

SH; med gy, gy brn, lmy, some gritty, tite

LM; med to dk brn, gy brn, argil ip, tite

STARK SHALE 4495(-2288)
 SH; blk, carb ip, scat pyr, platy

SWOPE 4504(-2297)
 LM; lt gy, tan, buff, foss ip, most dense - well cem, scat spar calc xtals, no vis por, no fluor, occ wh to off wh cht, ns.

LM; tan to lt brn, off wh, fxln w/fair p-p and interxln por, scat soft chalky mtz, dull to lt yel fluor, no vis stn, no odor, no gas kick

LM; med brn, hd, micritic, tite

SH; blk, carb ip, scat pyr

HERTHA 4556(-2349)
 LM; tan to cream, buff, sucrosic text - dolomitic ip, soft, fair interxln por, lt yel min fluor, no vis stn, no odor, ns.

LM; med brn, cse xln w/abnt foss frags, trc poor interpart por, blocky, no vis por, ns.

LM; med to dk brn, most dense, occ smoky to dk gy/blk cht, litho ip, tite

BASE KANSAS CITY 4591(-2384)
 SH; med gy, grn, brn, trc blk, firm

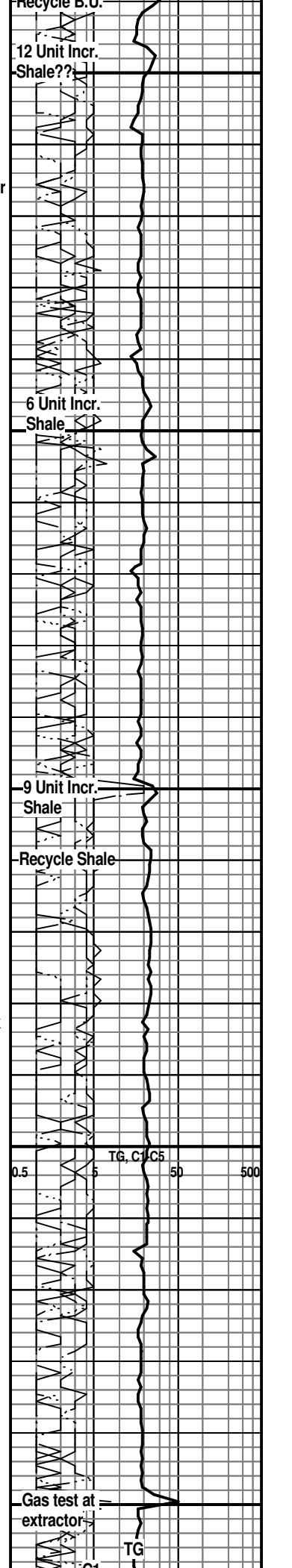
SH; maroon, rust brn, grn, platy, silty, occ pyr

PLEASANTON 4614(-2407)
 LM; lt gy, grn, lt brn, hd, micritic, no fluor, no stn or odor, ns.

SH; med to dk gy, gy grn, firm, occ foss

MARMATON 4632(-2425)
 LM; lt gy, lt gy brn, pale grn, hd, rare well cem foss, most micritic, tite

LM; tan to lt brn, foss ip w/scat small well cem pellets, occ blk tar/gils, no live shows, dull yel to no fluor, no odor, tite, interbdd amber to lt brn cht



A.V.= 148.95
at 55 SPM

conn
Vis 54
Wt. 9.3+
LCM 2#

conn

WOB 42K
PP 1250#
SPM 55
RPM 65-70

conn

R= Rough
Drilling

CFS. at 4759'

**DST #2
Cherokee -
Miss. Chert
4740' - 4796'
Corrected**

Vis 54
Wt. 9.4
LCM 2#

CFS. at 4804'

MudCo. Mud
Check at 4804'
ROP (min) 10
Gamma (A) 150
Vis 56 Wt. 9.4+
WL9.0 CI 4000
PH 10.5 LCM 2#

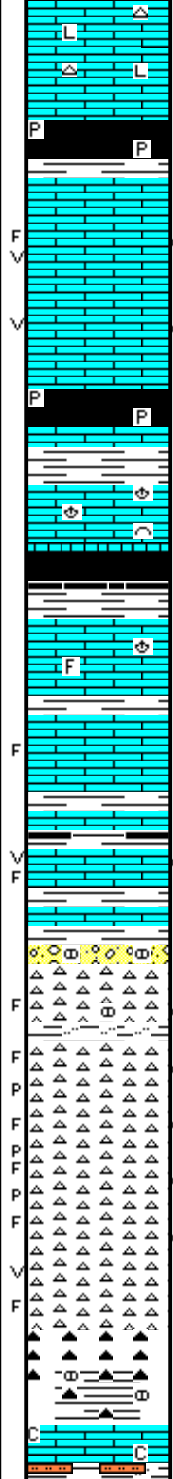
CFS. at RTD.

4700

4750

4800

4850



LM; lt to med brn, hd, litho - micritic, blocky, rare brn cht, no vis por, no fluor, ns.

SH; blk, v. dk gy, pyr ip.

PAWNEE 4678(-2471)

LM; tan to lt brn, fxln, scat fracs w/spar calc xtals, occ vug por w/live lt brn oil stn, med yel fluor, v. faint odor, weak cut

LM; lt to med brn, scat foss mat, occ rextalized vug por w/lt brn stn, poss fracs, v. faint odor, looks tite

SH; blk, carb, gassy, occ pyr

LM; med brn, hd, foss ip, well cem, no vis por, no fluor, ns.

CHEROKEE SHALE 4717(-2510)

SH; blk, carb ip, soft

LM; lt brn, fxln, rare foss, sev. pcs w/blk dead oil/gils flakes, no fluor, most tite, no live shows

LM; tan to lt brn, fxln, most dense, few pcs w/scat blk tar/gils, trc calc fld fracs, no live show, dull yel to no fluor, no gas kick

CHEROKEE LMST. 4748(-2541)

LM; tan, fxln, vug por w/live med brn stn, fracs w/edge stn, some gils, lt/med yel fluor, v. faint odor, fair/gd cut, few lt brn F.O. droplets

REWORKED MISS. 4760(-2553)

CHT; wh, opaque, fresh, fracs w/live edge stn, much blk tar/gils, faint odor, gas bubbles, some nodular rnd cht, grn gritty cht w/gas bubbles

CHT; wh, off wh, fresh and trip, fracs and fair p-p por, spotted lt brn oil stn, faint odor, scat brite yel fluor, no vis F.O., gas bubbles

CHT; wh, off wh, pred fresh, some weathered areas of tripolite w/p-p and rare vug por, fracs, rare brite yel fluor, faint odor, spotted live oil stn w/few gas bubbles

**DST #2: Cher/Miss. 4740' - 4796'
Corrected Depth to Log**

CHT; red, foss, fresh, varic shales, some grn cht nodules

KINDERHOOK SHALE 4812(-2605)

SH; med gy, gy grn, silty ip.

RTD. 4823' at 2:07 PM. 3/16/15

LTD. 4815'

Halliburton ACRT, NEU/DEN, Microlog

NOTE: This log was shifted upward by 5' to 8' for correlation purposes with the Halliburton Logs. Due to the Pipe Straps, it was determined that the Log TD. is correct.

