

LITHOLOGY STRIP LOG

WellSight Systems

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

Well Name: Unruh #4-33
Location: 1660' FSL & 1330' FWL, Sec. 33-T27S-R18W, Kiowa Co., KS.
Licence Number: 15-097-21817-00-00 Region: Einsel
Spud Date: 2/25/2015 Drilling Completed: 3/5/2015
Surface Coordinates: 1660' FSL & 1330' FWL, Sec. 33-T27S-R18W

Bottom Hole Same as Above
Coordinates:
Ground Elevation (ft): 2197' K.B. Elevation (ft): 2206'
Logged Interval (ft): 3900' To: 4830' Total Depth (ft): 4830'
Formation: Kinderhook Shale at Total Depth
Type of Drilling Fluid: Freshwater/Gel to 3275'; Chemical Gel 3275' to 4830'

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
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Wichita, KS. 67205-8856

Cores

None Taken

DSTs

DST #1(Kansas City 'I' zone) 4398' - 4417' Test Times 15"-45"-45"-90" IFP Fair Blow building to 10" Blow, FFP Strong Blow BOB/6.5 Min. No gas to Surface, 1" Blowback on FSI; REC: 445' Gas in Pipe, 62' G & OCWM(20%G, 15%O, 10%W, 55%M), 62' G & OCMW(39%G, 26%O, 25%W, 10%M) CI 65,000, Mud 3600; IFP 19-33#, ISIP 1237#, FFP 30-63#, FSIP 1285#, IHP 2164#, FHP 2106#, BHT 116 Deg. F.

DST #2(Cherokee - Miss. Chert) 4743' - 4812' Test Times 15"-55"-60"-120" IFP Strong Blow BOB/45 Sec., Gas to Surface in 4 Min. of ISI, FFP Strong Blow Gauged gas throughout Stabilized at 59.3 MCFG in 60 Min(23# on 0.25" Choke), no Blowback on SI's; REC: 30' GCM(10%G, 90%M), no oil or water; IFP 49-64#, ISIP 1507#, FFP 30-64#, FSIP 1503#, IHP 2319#, FHP 2298#, BHT 121 Deg. F.

Comments

2/25/15 MIRU Sterling Drilling Co. Rig #4, Spud at 8:30 PM. , 2/26/15 TD. 638' - CCH to set 8 5/8"; 2/27/15 Drilling at 1049'; 2/28/15 Drilling at 2644'; 3/1/15 Drilling at 3745'; 3/2/15 Drilling at 4280'; 3/3/15 TD. 4417' - Rig Repairs; 3/4/15 Drilling at 4594'; 3/5/15 TD. 4812' - TIH for DST #2 - Reached Total Depth of 4830' at 7:30 PM.; 3/6/15 RTD. 4830', LTD. 4826' - Logging Run #3(MRIL); 3/7/15 RTD. 4830' - Production Casing Set.

Set new 8 5/8"(24#) Surface Casing at 635' KB with 425 sacks cement(Basic Energy Services). Cement did circulate. PD. at 12:30 PM. on 2/26/15.

Set new 5 1/2"(15.5#) Production Casing at 4829' with 200 sacks of "Loeb Blend" cement(Basic Energy Services). PD. at 5:00 AM. on 3/7/15.

Surveys: 2.0 Deg. at 638'(Surface Casing); 0.75 Deg. at 4211'(Bit Trip); 0.50 Deg. at 4417'(DST #1); 0.50 Deg. at 4812'(DST #2).

Pipe Strap at 4211'(Bit Trip): Strap 2.59' Long to the Board, no correction made to the Board.


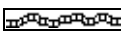
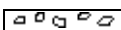
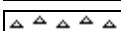
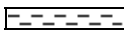


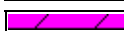




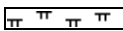
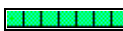
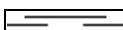
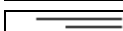
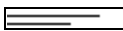



After review of the Halliburton Logs, DST data and sample shows, the operator elected to set new 5 1/2" Production Casing for completion in the Mississippi Chert and Kansas City "I" zones. The Lansing "A" zone should be perforated and tested prior to abandonment of the well based on gas kick and favorable log calculations.

LOG TOPS: (NOTE: The logs tops were all adjusted downward by 4' to 6' to correspond to driller depths which are considered correct based on Casing Tally).








































































Chase 2428(-222), Stotler 3384(-1178), Howard 3584(-1378), Heebner Shale 4029(-1823), Toronto 4041(-1835), Brown Lmst. 4179(-1973), Lansing 'A' 4189(-1983), L/KC. 'H' 4358(-2152), KC 'I' 4407(-2201), Stark Shale 4494(-2288), Hertha 4554(-2348), BKC 4592(-2386), Marmaton 4636(-2430), Cherokee Shale 4717(-2511), Reworked Miss. 4772(-2566), Clean Miss. 4786(-2580), Kinderhook Shale 4814(-2608).

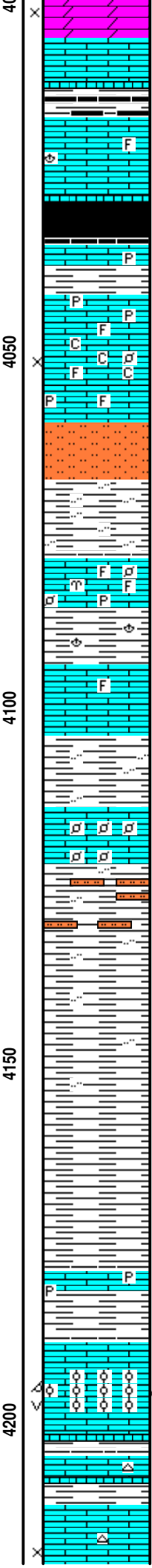
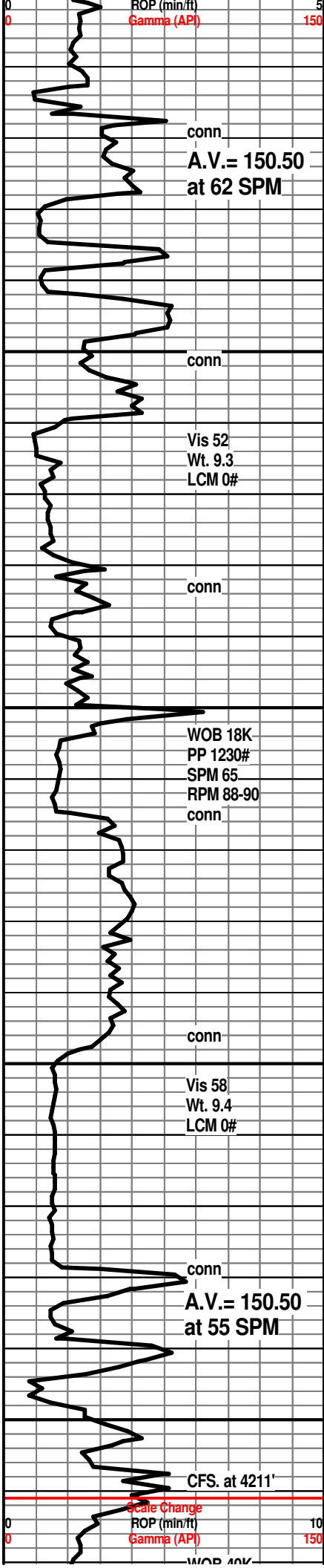
NOTE: Did not import Gamma Ray onto this log due to Depth Issues with Log depths.

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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DOL; lt brn, sucrosic, interbdd dolomitic lmst, fair interxln por, med yel min fluor, no vis stn, no gas kick, ns.

SH; dk gy, occ blk, platy, soft ip.

LM; lt to med brn, blocky, hd, rare well cem foss, no vis por, ns.

HEEBNER SHALE 4029(-1823)
SH; blk, carb ip, trc gas w/faint gas odor
LM; med brn, blocky, trc pyr, tite

TORONTO 4042(-1836)
LM; med brn, dense, scat pyr, tite
LM; wh to off wh, buff, foss ip, fxln w/abnt soft chalk and chalky mtx, fair interxln/interpart por, dull yel fluor, no stn or odor, ns.

DOUGLAS SHALE 4060(-1854)
SLTST; lt gy, mica w/vf gr qtz ss interbdd, ns.

SH; lt gy, silty, platy

LM; lt brn, tan, highly foss, much hash, pred. well cem, rare pyr, no fluor, no vis por, ns.

SH; med gy, platy, foss ip.

LM; med brn, most dense - micritic, blocky, rarely foss, no vis por, ns.

SH; lt to med gy, silty ip, firm

LM; lt to med brn, hd, foss ip - abnt small pellets, well cem, no vis por, lt yel min fluor, ns.

SH; med gy, occ gy grn, silty ip w/scat sltst interbdd, rarely pyr, firm

SH; med gy, most smooth, platy, rarely silty

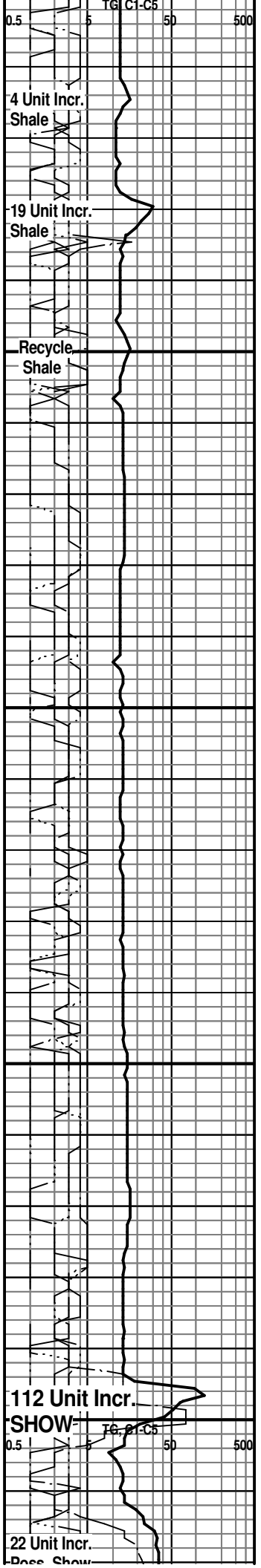
SH; med gy, platy

BROWN LMST. 4179(-1973)
LM; med brn, hd, pyr ip, tite

LANSING 'A' 4189(-1983)
LM; lt brn, tan, oolitic, well dev. oomoldic por w/scat vugs, brite yel fluor, few gas bubbles, v. faint to fair odor, spotted lt brn oil stn in few pieces, pred. gas show

Bit Trip at 4211' - TIH w/Button Bit

LANSING 'B' 4212(-2006)
LM; off wh, lt gy, fxln, poor to fair interxln por, rare wh blk, dull yel fluor, no stn or odor, ns.



WOB 40K
PP 1210#
SPM 55
RPM 76

conn

A.V.= 143.00
at 52 SPM

Vis 55
Wt. 9.3
LCM 0#

conn

WOB 41K
PP 1250#
SPM 52
RPM 72

conn

MudCo. Mud
Check at 4325'
Vis 51 Wt. 9.3
WL 8.0 Cl 3600
PH 10.5 LCM 0#
conn

WOB 42K
PP 1250#
SPM 53
RPM 70
conn

A.V.= 143.00
at 53 SPM

Vis 56
Wt. 9.4
LCM 0#

DST #1
K.C. 'I'
4398' - 4417'

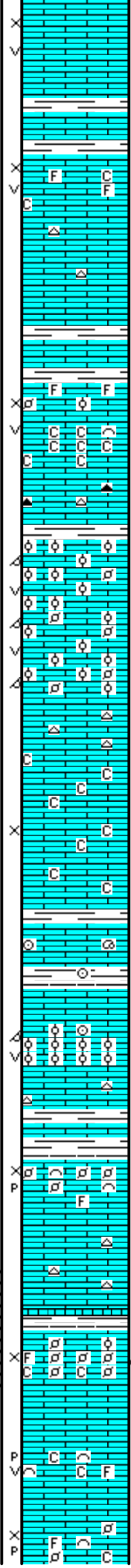
CFS. at 4417'
MudCo. Mud
Check at 4417'
Vis 53 Wt. 9.4
WL 9.6 Cl 5000
PH 9.5 LCM 0#

4250

4300

4350

4400



cht, v. dull yel fluor, no stn or odor, ns.

LM; It gy, med xln w/scat fair vug por, rare lt yel fluor, no vis stn, no sample shows

LM; med brn, micritic, tite

LM; tan to cream, buff, med xln to gran text, occ foss mat, fair interxln w/occ vug por, minor chalky mtx, dull yel fluor, no stn or odor, ns.

LM; tan to lt brn, most dense, blocky, occ off wh/gy cht, ns.

LM; tan to lt brn, highly foss, scat fair interpart and vug por, dull yel fluor, no stn or odor, no gas kick, ns, bcm very chalky at base

LM; med to dk brn, hd, scat gy foss cht, tite

LANSING 'G' POROSITY 4296(-2090)

LM; It to med brn, oolitic, thick oolite shoal w/occ foss mat, most med size molds, gd oomoldic w/scat vug por, brittle, dull yel min fluor, no vis stn, no odor, no sample shows

LM; tan to cream, buff, fxln, some dense - micritic, scat wh cht, ns.

LM; off wh, buff, fxln w/much soft chalk and chalky mtx, poor interxln por, occ cse opaque spar calc xtals, no fluor, no stn or odor, ns.

SH; med gy, grn, platy

LM; med brn, blocky, well cem foss, tite

LANSING/KC 'H' 4358(-2152)

LM; It brn, oolitic, small to med size molds, gd oomoldic por, brittle ip, rare vug por, dull to lt yel min fluor, no stn or odor, no gas kick, ns.

LM; tan, lt brn, hd, blocky, scat off wh cht, tite

SH; med gy, grn, fiss

LM; tan to cream, buff, foss - finely pelletal ip, fair interpart w/scat p-p por, minor chalky mtx, no fluor, no stn or odor, no gas kick

LM; tan to cream, lt brn, most dense, micritic, scat gy cht, tite

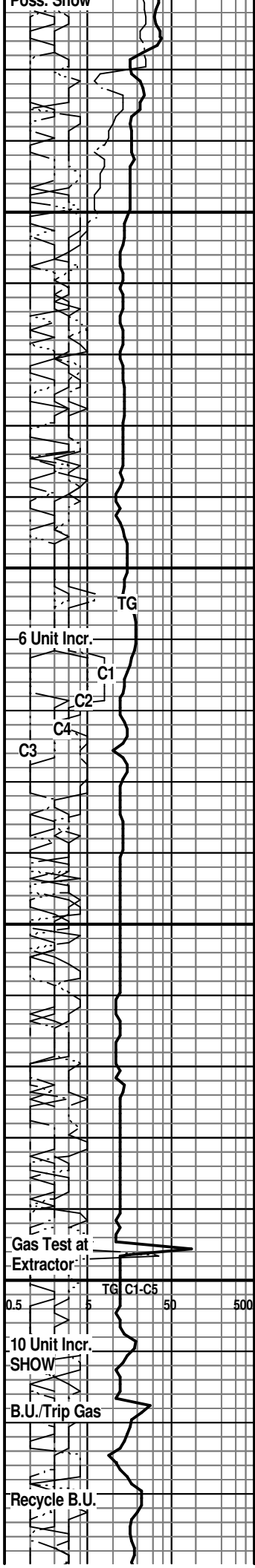
KANSAS CITY 'I' 4407(-2201)

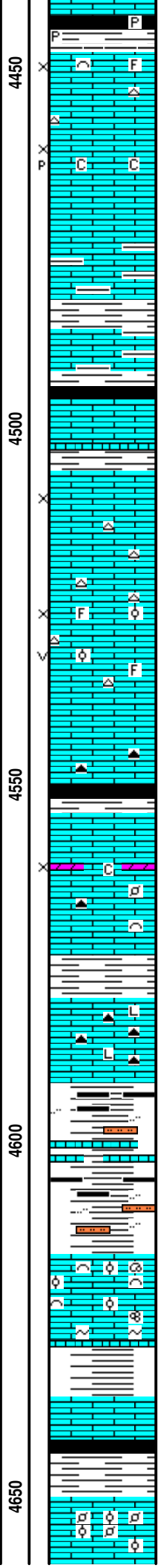
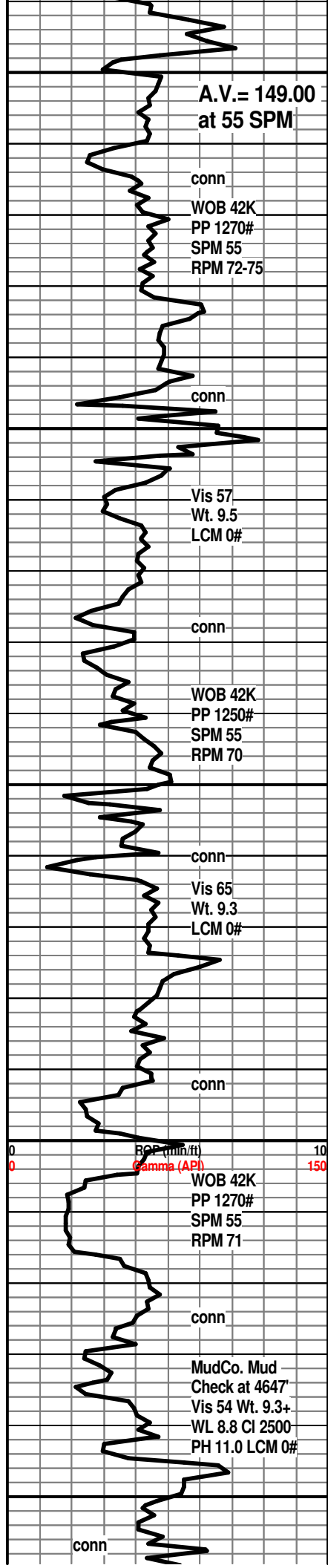
LM; It brn, foss - pelletal to oolitic, fair interpart por, spotted lt brn stn, trc FO, fair to gd odor, much brite yel fluor, trc gas bubbles, gd cut

DST #1: K.C. "I" Zone 4398' - 4417'

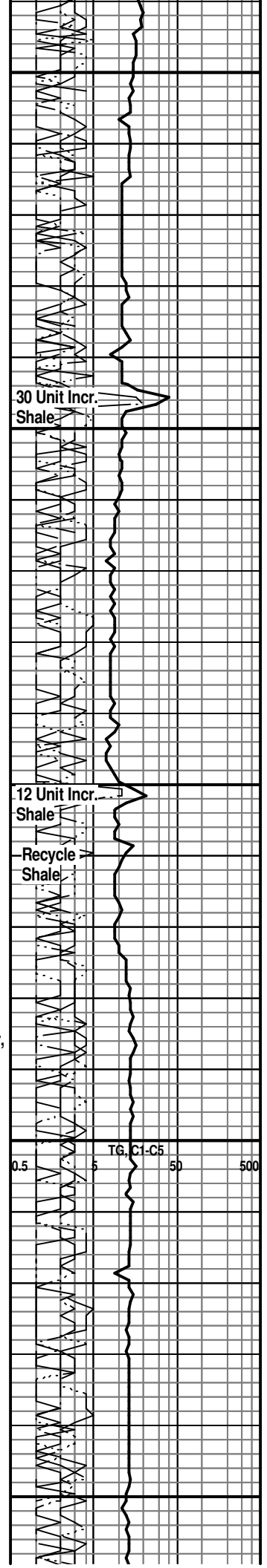
LM; tan to cream, off wh, foss w/fair dev. p-p and small vug por, chalky ip, no fluor, no stn or odor, no gas kick

LM; tan to buff, off wh, foss w/scat hash, fair interpart & p-p por, minor soft chalky mtx, dull yel fluor, no stn or odor, no gas kick





odor, no gas kick
SH; dk gy - blk, pyr ip.
KANSAS CITY 'J' 4447(-2241)
LM; tan to buff, lt brn, foss at top w/fair interpart por, bcm dense - micritic, rare off wh cht, no fluor, no stn or odor, ns.
LM; tan to cream, buff, fxln w/scat fair interxln and p-p por, trc sucrosic text, dull yel min fluor, no stn or odor, minor chalky mtx, ns.
LM; med brn, gy brn, hd, argil ip, tite
SH; med gy, platy, firm
LM; med to dk gy, gy brn, some argil, hd
STARK SHALE 4494(-2288)
SH; blk, carb ip, platy
SWOPE 4506(-2300)
LM; tan to off wh, buff, fxln ip, some dense - micritic, scat lt yel min fluor, no vis stn, no odor, ns, occ off wh to lty gy occ foss cht
LM; tan to off wh, med to cse xln, scat foss mat w/few oolites, much spar calc, med yel fluor, fair to gd interpart and occ vug por, no vis stn, no odor, no gas kick, barren
LM; med to dk brn, micritic, scat brn cht, tite
SH; blk, platy, carb ip.
HERTHA 4554(-2348)
LM; tan to lt brn, fxln w/scat sucrosic text, partly dolomitic, soft, gd interpart por, trc chalky mtx, dull yel fluor, no vis stn, no odor, ns.
LM; med to dk brn, foss ip, most well cem, occ brn, to dk gy cht, no vis por, occ spar calc, lt/med yel min fluor, interbdd hd litho lmst, ns.
BASE KANSAS CITY 4592(-2386)
SH; med to dk gy, some blk, silty, varic grn slitst interbdd.
SH; dk gy, some blk, most varic, platy, soft, interbdd silty sh and slitst.
PLEASANTON 4616(-2410)
LM; off wh, tan - cream, highly foss w/much hash and ooids, well cem, lt yel fluor, poor to no interpart por, rare grn glau - clay incl, no stn or odor, ns.
SH; dk gy, blk, varic, platy
MARMATON 4636(-2430)
LM; lt gy brn, lt gy, occ pale grn tint, hd, blocky, tite
SH; med gy, gy grn, firm
LM; tan to lt brn, scat well cem foss, occ ooids/small pellets, few pcs w/dk brn - blk dead oil/gils, spotty med yel fluor, no vis por, no odor, no gas kick, looks tite



A.V.= 148.25
at 55 SPM

conn

WOB 42K
PP 1200#
SPM 55
RPM 65-70

Vis 57
Wt. 9.4
LCM 1.5#

conn

WOB 42K
PP 1200#
SPM 55
RPM 70

conn

CFS. at 4761'
A.V.= 148.25
at 55 SPM

conn

DST #2
Miss. Chert
4743' - 4812'

Vis 55
Wt. 9.4
LCM 2#

ROP (min/ft)
Gamma (API)

MudCo. Mud
Check at 4812'
Vis 58 Wt. 9.4
WL 8.8 CI 4500
PH 10.5 LCM 2#

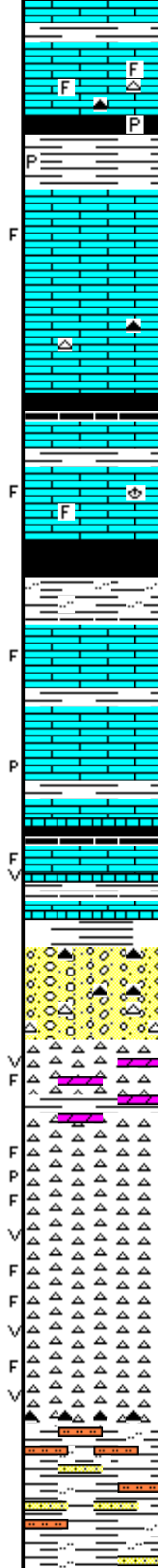
CFS. at RTD.

4700

4750

4800

4850



LM; lt brn, foss ip, most dense, scat amber/lt brn cht, no vis por, rare lt yel fluor, ns.

SH; dk gy, blk, dk grn, firm, rarely pyr.

PAWNEE 4680(-2474)

LM; lt brn, med xln to micritic, most massive bdd - dense, occ lt yel min fluor, rare spar calc xtals, poss frags, no stn or odor, no gas kick

LM; lt to med brn, dense, blocky, some litho, hd, occ amber/tan cht, ns.

SH; blk, carb, gassy w/faint gas odor

LM; lt to med brn, foss ip, well cem, scat spar calc - edge xtals, poss frags, no fluor, ns.

CHEROKEE SHALE 4717(-2511)

SH; blk, trc carb mat, gy grn, platy, occ silty ip.

LM; lt to med brn, fxln to micritic, few pcs w/blk tar/gils, poss frags, most tite, no fluor, no kick

LM; tan to lt brn, fxln, most dense, few pcs w/p-p por w/spotted dk brn stn, trc frags w/edge stn, no odor, no gas kick

CHEROKEE LMST. 4751(-2545)

LM; lt brn, fxln, fair amt of blk tar/gils, some frags w/live edge stn, no odor, few pcs w/small vug por and live oil stn, fair cut

CONGL; org,wh cht, partly weathered, scat grn weathered lmst

REW. MISS. CHERT 4772(-2566)

CHT; wh, off wh, fresh, interbdd cherty dolo and tite appearing gritty - dolomitic cht, rare lt yel fluor, v. faint odor, rare spotted med brn stn, scat blk dead oil in poor vug por

CHT; wh, transl, most fresh, scat frags w/edge stn, occ p-p and vug por, spotted med yel fluor, faint odor, some trip cht w/live oil stn

CHT; wh, fresh with incr. tripolite, abnt frags w/much edge stn, SSFO, faint odor, abnt brite yel fluor, occ vug por, spotted to rarely even lt brn oil stn, better por. than above

DST #2: Miss. Chert 4743' - 4812'

KINDERHOOK SHALE 4814(-2608)

SH; varic, maroon, red brn, silty ip, scat dk org/grn/brn fresh & weath. cht

SH; pale grn, gy grn, sl. sandy ip, interbdd sltst and hd vf gr qtz ss

RTD. 4830' at 7:30 PM. on 3/5/15

LTD. 4830'(See NOTE below)

Halliburton ACRT, NEU/DEN w/PE,
Microlog, MRIL

NOTE: Log Depth was adjusted to match RTD. based on Casing Talley, being shifted downward by 4' to 6'.

6 Unit Incr.
Shale

45 Unit Incr.
Shale

3 Unit Incr.
Shale

5 Unit Incr.
Poss. Show

5 Unit Incr.

12 Unit Incr.
SHOW

22 Unit Incr.
SHOW

Cl-C5 50 500

