

# LITHOLOGY STRIP LOG

## WellSight Systems

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

Well Name: Naumann #2-32  
Location: 630' FSL & 1917' FEL, Sec. 32-T27S-R18W, Kiowa Co., KS.  
Licence Number: 15-097-21796-0000 Region: Einsel Field  
Spud Date: 7/4/2014 Drilling Completed: 7/11/14  
Surface Coordinates: 630' FSL & 1917' FEL, Sec. 32-T27S-R18W

Bottom Hole Same as Above  
Coordinates:  
Ground Elevation (ft): 2210' K.B. Elevation (ft): 2223'  
Logged Interval (ft): 3900' To: 4855' Total Depth (ft): 4855'  
Formation: Kinderhook at Total Depth  
Type of Drilling Fluid: Freshwater/Gel to 3295'; Chemical Gel 3295' to 4855'  
Printed by MUD.LOG from WellSight Systems 1-800-447-1534 [www.WellSight.com](http://www.WellSight.com)

### OPERATOR

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### GEOLOGIST

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### Cores

None Taken

## DSTs

DST #1(Lansing 'A') 4211' - 4227'(Corrected Depths to Log) Test Times 15"-45"-45"-90" IFP Strong Blow BOB/30 Sec., FFP Strong Blow BOB/10 Sec., no Gas to Surface, no Blowback on SI's; REC: 816' Gas in Pipe, 60' GCWM(20%G, 15%W, 65%M) w/few oil spots, CI 34,000, Mud 5000; IFP 12-21#, ISIP 947#, FFP 21-34#, FSIP 1090#, IHP 2207#, FHP 2122#, BHT 118 Deg. F.

DST #2(Kansas City 'H' + 'I' zones) 4406' - 4432'(Corrected Depths to Log) Test Times 15"-45"-45"-90" IFP Strong Blow BOB/35 Sec., 6" Blowback on ISI, FFP Strong Blow BOB/2.5 Min, no Gas to Surface, 3" Blowback on FSI; REC: 748' Gas in Pipe, 20' GO&WCM(42%G, 25%O, 30%W, 3%M), 192' GO&WCM(35%G, 10%O, 45%W, 10%M), 618' MSW(97%W, 3%M) CI 59,000, Mud 9000; IFP 64-195#, ISIP 1377#, FFP 217-402#, FSIP 1334#, IHP 2242#, FHP 2187#, BHT 122 Deg. F.

DST #3(Kansas City 'J' zone) 4450' - 4466'(Corrected Depths to Log) Test Times 15"-45"-45"-90" IFP Good Blow building to 11", FFP Good Blow building to BOB/17 Min., 0.25" Blowback on FSI; REC: 528' Gas in Pipe, 60' G&OCWM(10%G, 15%O, 23%W, 42%M) CI 13,000, Mud 13,000; IFP 16-30#, ISIP 829#, FFP 36-55#, FSIP 876#, IHP 2172#, FHP 2067#, BHT 119 Deg. F.

DST #4(Miss. Chert) 4759' - 4819'(Corrected Depths to Log) Test Times 15"-45"-60"-120" IFP Strong Blow BOB/1 Min., FFP Strong Blow Gas to Surface in 4 Min., Gauged Max. 11.8 MCFG in 60 " of FFP, No Blowback on SI's; REC: 80' GSOCWM(12%G, 2%O, 85%M, 1%W) CI 9,000, Mud 9,000; IFP 53-58#, ISIP 1278#, FFP 55-80#, FSIP 1385#, IHP 2437#, FHP 2373#, BHT 124 Deg. F.

## Comments

7/3/14 MIRU Sterling Drilling Co. Rig #5; 7/4/14 Spud at 12:00 AM.,TD. 264' - CCH for Conductor Pipe; 7/5/14 TD. 624' - WOC; 7/6/14 Drilling at 1950'; 7/7/14 Drilling at 3745'; 7/8/14 TD. 4230' - TIH after DST #1; 7/9/14 TD. 4436' - DST #2; 7/10/14 Drilling at 4512'; 7/11/14 TD. 4824' - DST #4; 7/12/14 RTD. 4855', LTD. 4850' - TIH to LDDP for setting 5 1/2" Production Casing.

Set new 13 3/8" Conductor Casing at 260' with 280sx. of Cement (Basic Energy Services). Cement did Circulate to Cellar. PD. at 11:30 AM. 7/4/14.

Set new 8 5/8" Surface Casing at 620' with 400 sx. of Cement(Basic Energy Services). Cement did circulate. PD. at 4:30 AM. 7/5/14.

Set new 5 1/2"(15.5#) Production Casing at 4847' with 200 sx. of "Loeb Blend" cement(Basic Energy Services). PD. at 10:15 PM. on 7/12/14.

Surveys: 0.75 Deg. at 264'(Conductor); 0.75 Deg. at 624'(Surface Casing); 2.25 Deg. at 4230'(DST #1); 1.25 Deg. at 4436'(DST #2); 1.75 Deg. at 4824'(DST #4).

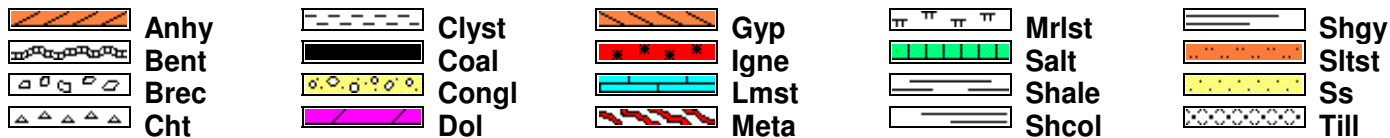
Pipe Strap at 4230'(DST #1): Strap 0.20' Long to the Board, no correction made to the Board.

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

LOG TOPS: Chase 2435(-212), Stotler Lmst. 3398(-1175), Howard 3602(-1379), Heebner Shale 4044(-1821), Toronto 4060(-1837), Brown Lmst. 4200(-1977), Lansing 'A' 4207(-1984), Lansing/KC 'H' 4373(-2150), K.C. 'I' 4422(-2199), K.C. 'J' 4459(-2236), Stark Shale 4508(-2285), Hertha 4567(-2344), BKC 4601(-2378), Marmaton 4647(-2424), Cherokee Shale 4734(-2511), Miss. Chert 4790(-2567), Basal Miss. Lmst. 4834(-2611), Kinderhook Shale 4841(-2618).

NOTE: This log was shifted upward by 3' to 5' for correlation purposes with the Halliburton Logs.

**ROCK TYPES**



**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

- Sltstrg
- Ssstrg

**TEXTURE**

- Boundst
- Chalky
- Cryxln
- Earthy
- Finexln
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest

**STRINGER**

- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst

**OTHER SYMBOLS**

**POROSITY**

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

- Vuggy

**SORTING**

- Well
- Moderate
- Poor

**ROUNDING**

- Rounded
- Subrnd
- Subang
- Angular

**Spotted**

- Ques
- Dead

**EVENT**

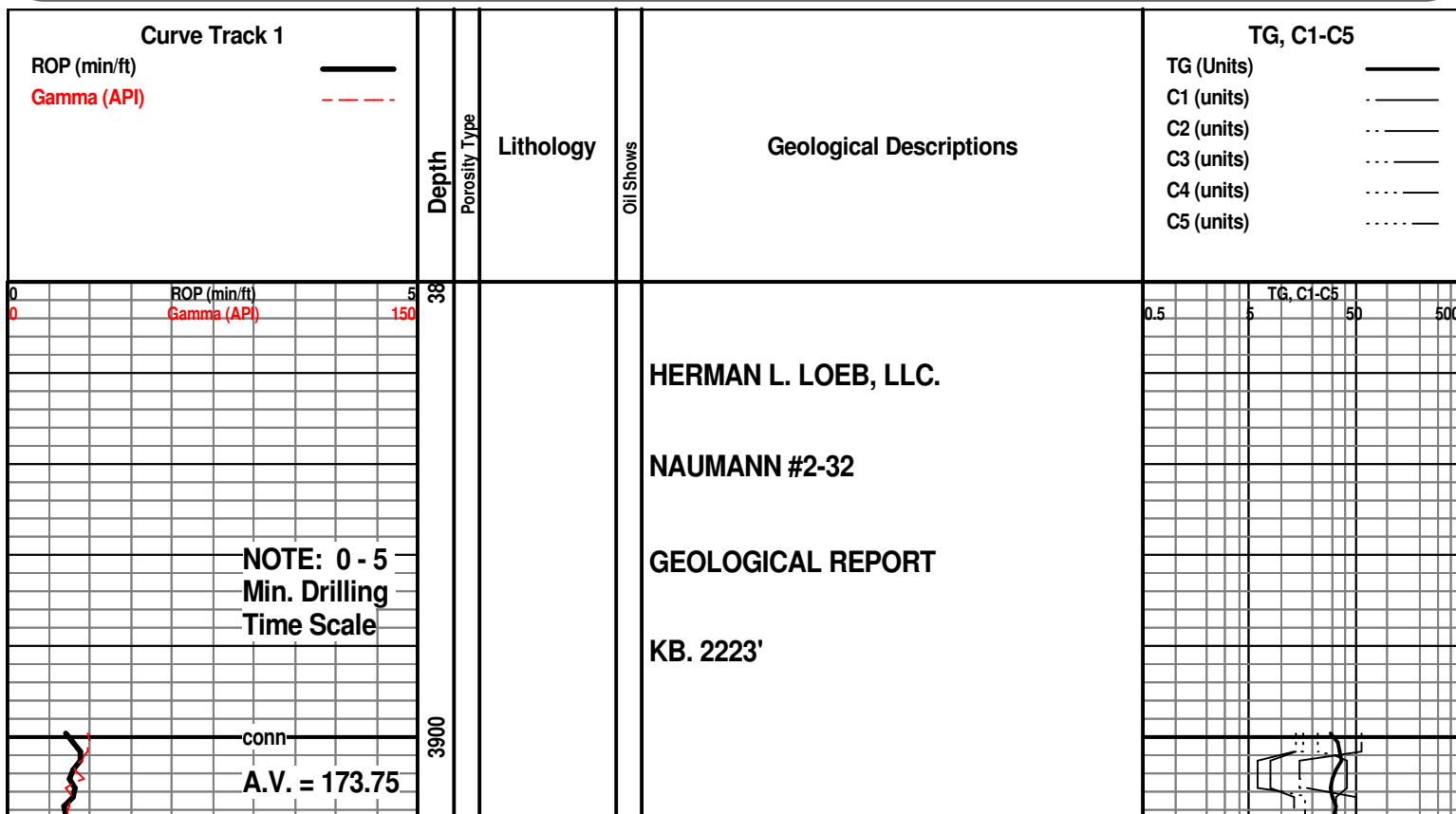
- Rft
- Sidewall

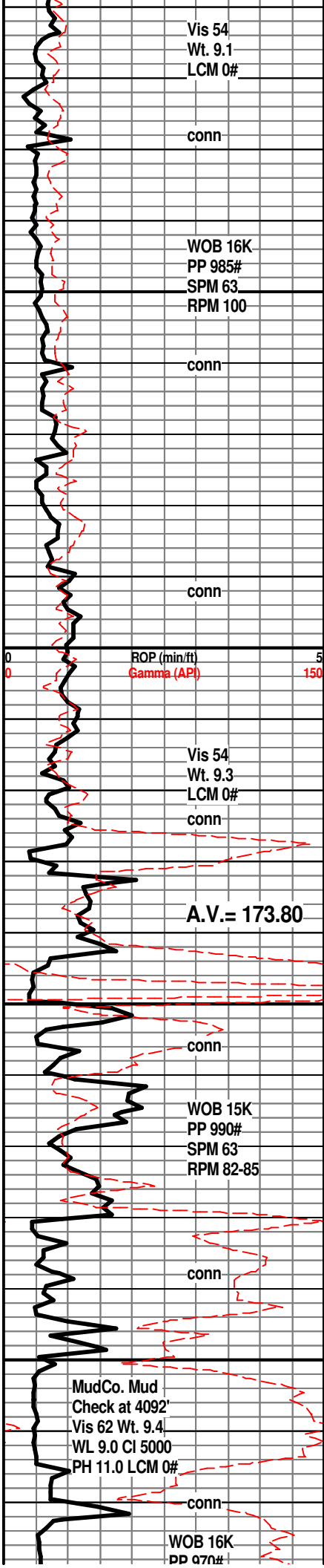
**INTERVAL**

- Core
- Dst

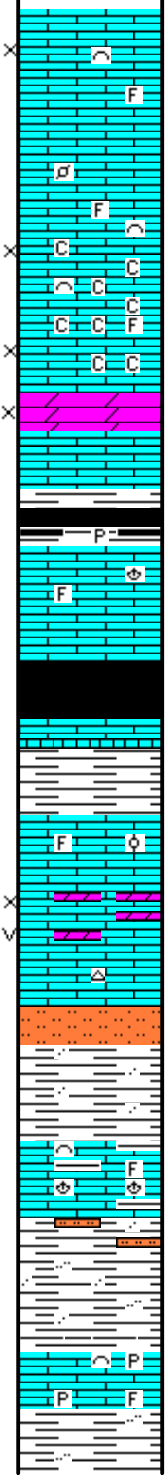
**OIL SHOW**

- Even





3950  
4000  
4050  
4100



LM; tan to lt brn, fxln w/scat foss mat, interbdd lt gy lmst, scat lt yel min fluor, no stn or odor, ns.

**Drilling with PDC Bit - 20' Samples start at 4000'**

LM; wh, off wh, highly foss ip, fair to gd interpart/interxln por, much soft chalk and chalky mtx, scat lt yel min fluor, ns.

DOL; lt brn, tan, sucrosic, fair interxln por, lt yel min fluor, no vis stn, ns.

SH; dk gy, some blk, platy, rare pyr

LM; lt gy to lt brn, fxln to micritic, blocky ip, rare foss mat, no vis por, v. dull yel min fluor, no stn or odor, ns.

**HEEBNER SHALE 4044(-1821)**

SH; blk, carb, platy, trc gas bubbles  
LM; med brn, hd, blocky, micritic

**TORONTO 4060(-1837)**

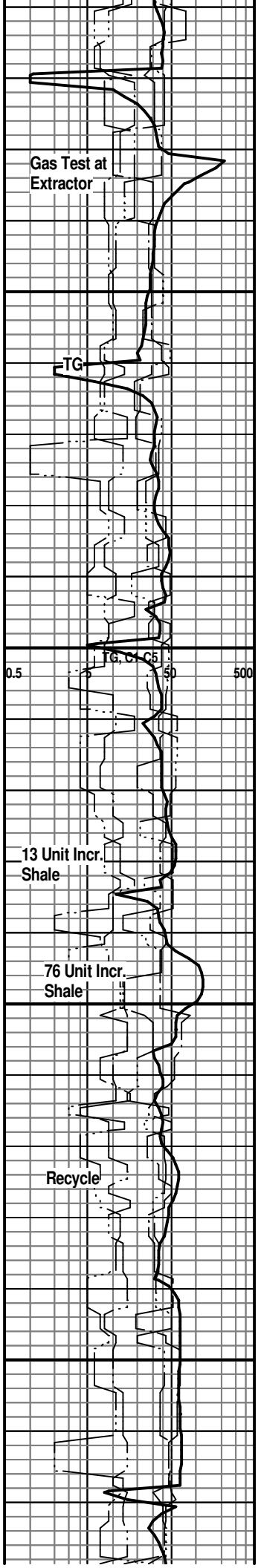
LM; tan to off wh, buff, some lt gy, fxln to micritic, foss ip, interbdd fxln to partly sucrosic/dolomitic lmst, fair interxln w/scat vug por, scat dull yel min fluor, no vis stn, no gas kick, minor amt. of wh cht, ns.

**DOUGLAS SHALE 4080(-1857)**

SLTST; lt gy, mica ip, soft, sandy ip.  
**40 Stand Wiper Trip at 4092', Washed through bridges at 3240' and 3960'**  
LM; med to dk gy, gy brn, foss ip, most dense, interbdd hd argil lmst.

SH; lt to med gy, silty to sandy, occ mica, platy

LM; med gy, gy brn, foss ip, pyr, dense



SPM 63  
RPM 80-85

conn

4150

conn

A.V. = 174.40

ROP (min/ft)  
Gamma (API)

4200

DST #1  
conn  
Lansing A  
4211' - 4227'  
CFS. at 4227'

Scale Char  
ROP (min/ft)  
Gamma (API)

4250

MudCo. Mud  
Check at 4230'  
Vis 61 Wt. 9.5  
WL 9.6 Cl 9000  
PH 11.0 LCM 0#  
A.V. = 165.00  
at 58 SPM

conn

WOB 38K  
PP 965#  
SPM 58  
RPM 80

conn

Vis 54  
Wt. 9.2  
LCM 0#

conn

WOB 38-40K  
PP 1000#  
SPM 60  
RPM 75-80

4300

SH; lt to med gy, platy, occ silty

SH; lt to med gy, platy, occ silty

SH; lt to med gy, platy, occ mica, silty ip.

**BROWN LMST. 4200(-1977)**  
LM; med to dk brn, dense, blocky, rare pyr

**LANSING 'A' 4207(-1984)**  
LM; lt to med brn, oolitic, med to lrg moldic por, scat vug por, most brittle, med to brite yel fluor, abnt gas bubbles, trc lt brn oil stn, v. faint odor, weak to no cut, GAS SHOW

LM; lt gy brn, hd, foss ip, scat off wh cht, tite  
**DST #1: Lansing 'A' 4211' - 4227'**  
Corrected Depths to Log  
Drilling with Button Bit below 4230'

**LANSING 'B' 4237(-2014)**  
LM; lt to med brn, foss ip, well cem, blocky, no vis por, no fluor, ns.

LM; tan to buff, lt gy, foss ip, fair dev. vug por, minor chalky mtx, interbdd wh to off wh cht, lt yel fluor, no vis stn, no odor, no cut, ns.

LM; tan to buff, lt brn, fxln to micritic, rare poor interxln por, most w/no vis por, scat off wh/tan cht, v. dull to no fluor, no stn, ns.

LM; lt brn, tan, foss ip w/scat small pellets, most well cem, lt yel min fluor, no stn, interbdd brn cht

SH; med gy, silty ip, firm, occ foss

DOL; lt brn, sucrosic, some lmy, fair interxln and vug por, lt yel min fluor, no stn or odor, no gas kick

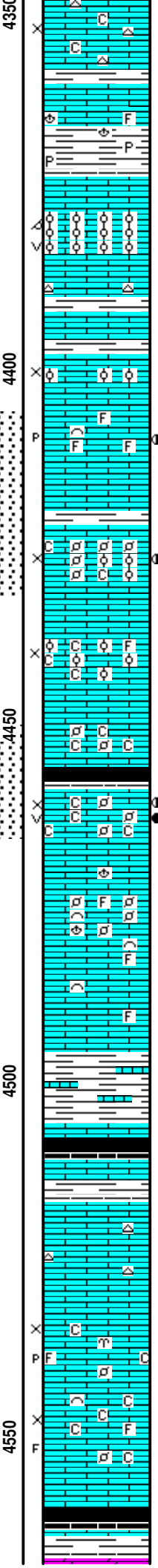
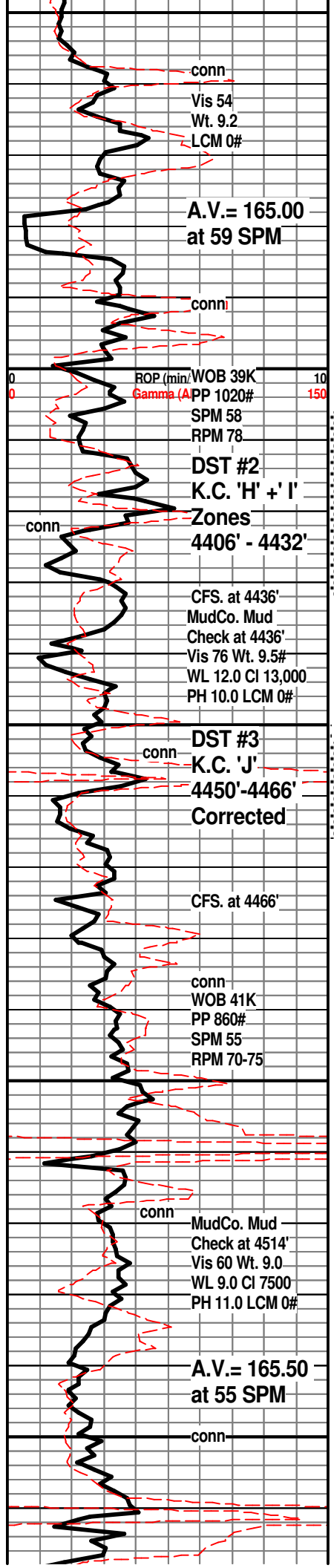
LM; tan to off wh, buff, fxln w/occ sucrosic text, trc brn oolitic lmst(slough?), poor interxln por, spotted lt yel fluor, no stn, occ smoky cht

LM; tan to cream, off wh - wh, fxln w/fair interxln por, interbdd soft chalk and chalky lmst, scat lt yel min fluor, no stn or odor, no gas kick

0.5 5 50 500

460 Unit Incr. SHOW

TG



LM; tan to cream, buff, f to med xln, rare chalky mtx, poor interxln por, no fluor, interbdd wh to off wh cht, ns.

LM; med gy, gy brn, foss ip, tite

SH; med to dk gy, platy, occ pyr

**LANSING/KC. 'H' 4373(-2150)**

LM; tan to buff, lt gy brn, oolitic w/most small to med size moldic por, occ vug por, brittle, lt to occ med yel fluor, no vis stn, questionable gas bubbles, no sample shows

LM; lt gy, lt brn, dense, micritic, cherty ip, tite

LM; lt brn, foss w/rare pellets, partly oolitic(poss slough), lt yel fluor, no vis stn

LM; lt brn, foss ip, scat fair p-p por, spotted lt brn oil stn, faint to fair odor, med/brite yel fluor, fair cut, trc gas bubbles

**KANSAS CITY 'I' 4422(-2199)**

LM; tan to lt brn, buff, foss - finely pelletal w/some oolites, loosely cem, fair oil odor, most spotted lt brn stn, brite yel fluor, some chalky

**DST #2: K.C. 'H' + 'I' 4406' - 4432'**  
**Corrected Depths to LOG**

LM; off wh, tan, buff, foss - finely oolitic ip, minor chalky mtx, gd interpart/interxln por, dull yel fluor, no vis stn, no odor, no gas kick

LM; tan to cream, buff, foss w/rare small ooids, pellets, chalky ip, most tite, no fluor, ns.

**KANSAS CITY 'J' 4459(-2236)**

LM; tan, med xln/gran text, gd interxln and small vug por, scat foss mat, SFO, gas bub, fair odor, brite yel fluor, gd cut, spotted/even lt brn stn, some w/chalky lmst and brite yel fluor, poss barren por

**DST #3: K.C. 'J' Zone 4450' - 4466'**  
**Corrected Depths to LOG**

LM; lt to lt brn, foss ip, well cem hash/pellets, most dense, no vis por, dull yel fluor, ns.

LM; lt to med brn, foss ip, hd, blocky, tite

SH; med to dk gy, gy brn, lmy, tite

**STARK SHALE 4508(-2285)**

SH; blk, carb ip, trc gas w/faint gas odor

**SWOPE 4517(-2294)**

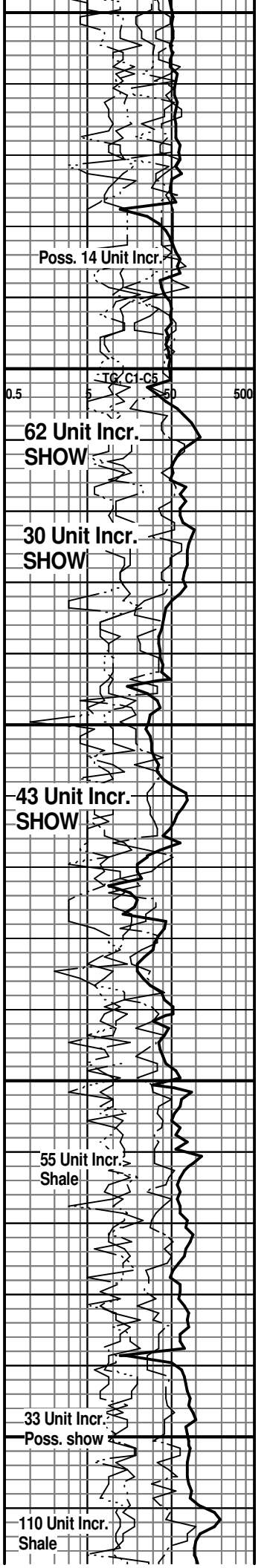
LM; tan to off wh, buff, fxln, scat lt gy cht, no vis por, no fluor, no stn or odor, ns.

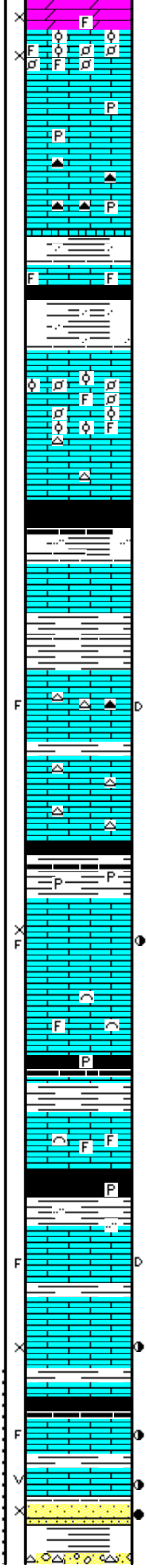
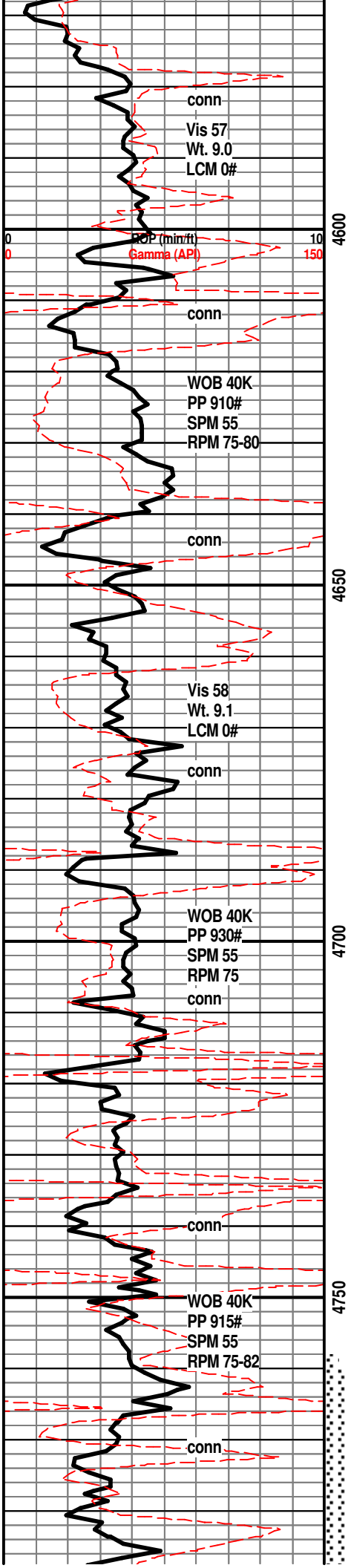
LM; tan to buff, cream, foss w/scat fair interpart/p-p por, minor chalky mtx, no fluor, no stn or odor, ns.

LM; tan to cream, off wh, med xln w/occ cse spar calc xtals, minor chalky mtx, foss ip, fair interxln por, trc frags, no fluor, no vis stn, no sample shows

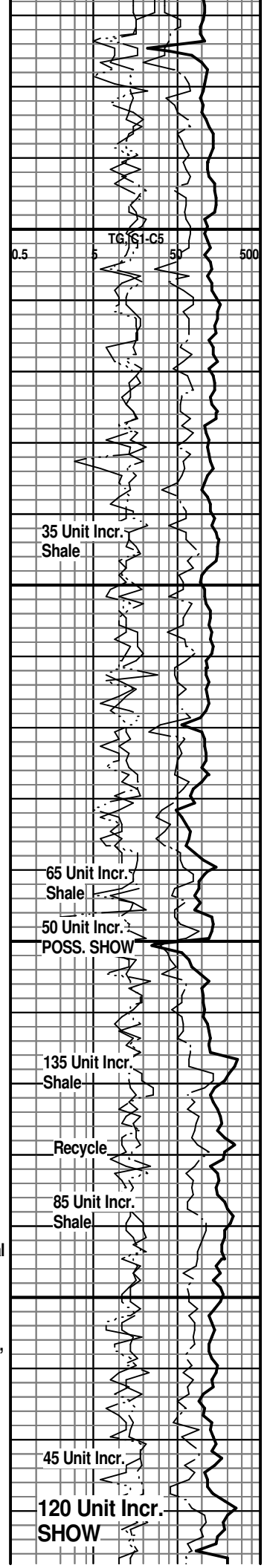
SH; blk, platy, carb ip, trc gas

**HERTHA 4567(-2344)**





DOL; tan, bn, sacros, v. soft, gd interxn por, trc foss mat, lt yel min fluor, no stn, ns.  
 LM; lt brn, highly foss/oolitic ip, some brittle, med yel fluor, fair interpart por, no vis stn, no odor, no gas kick  
 LM; med to dk brn, hd, scat pyr, occ smoky to dk gy cht, litho ip, tite  
**BASE KANSAS CITY 4601(-2378)**  
 SH; grn, gy grn, silty ip, firm  
 LM; med gy brn, foss ip, hd  
 SH; grn, maroon, blk, varic, silty ip, soft  
**PLEASANTON 4617(-2394)**  
 LM; tan to buff, pale yel, v. foss w/well cem ooids and pellets, occ cherty, lt yel min fluor, no stn, ns.  
 LM; med brn, dense, blocky, micritic  
 SH; blk, grn, med gy, maroon, varic, silty ip.  
**MARMATON 4647(-2424)**  
 LM; lt brn, lt gy w/pale grn tint, argil ip, most dense - micritic  
**ALTAMONT 4662(-2439)**  
 LM; lt brn, tan, most dense, micritic, interbdd gy to amber cht, few pcs w/blk tar/gilsonite on edges - poss frags, no stn, no fluor, no gas kick  
 LM; tan to lt brn, hd, most micritic, scat tan to gy cht, no vis por, no fluor, ns.  
 SH; blk, dk gy, platy, occ pyr  
**PAWNEE 4694(-2471)**  
 LM; lt brn, fxln, scat poor interxn por w/few frags, spotted med/dk brn oil stn, spotted med yel fluor, v. faint odor, looks tite  
 LM; lt to med brn, foss ip, well cem, no vis por, scat lt yel fluor, no vis stn, ns.  
 SH; blk, scat pyr, platy, trc gas  
 LM; tan to buff, lt brn, fxln, no vis por, occ foss - well cem, dull yel fluor, no stn/odor, ns.  
**CHEROKEE SHALE 4734(-2511)**  
 SH; blk, grn, gy, platy, occ pyr, silty ip.  
 LM; lt to med brn, fxln, scat dk brn oil stn, most residual stn, some poor interxn por, lt yel fluor, looks tite, no gas kick  
 LM; lt brn, fxln, scat amber cht, few pcs w/med brn spotted oil stn, dull yel fluor, no odor, poor interxn por, weak cut, no apparent gas kick  
 LM; lt to med brn, med xln ip, much dk brn live stn, some frags, no odor, med yel fluor  
 LM; tan, dk stn, scat vug por, lt yel fluor  
 SS; clr, f gr qtz, clusters, some fri, some tite, most w/lt brn oil stn, SSFO, lt yel fluor



35 Unit Incr. Shale

65 Unit Incr. Shale

50 Unit Incr. POSS. SHOW

135 Unit Incr. Shale

Recycle

85 Unit Incr. Shale

45 Unit Incr.

120 Unit Incr. SHOW

Vis 60  
Wt. 9.2  
LCM 0#

conn (min/ft)  
ma (A)

**DST #4**  
**Miss. Chert**  
**4759' - 4819'**  
**Corrected**

CFS. at 4819'  
MudCo. Mud  
Check at 4824'  
Vis 66 Wt. 9.5  
WL 9.6 CI 9000  
PH 10.5 LCM 0#

WOB 40K  
PP 850#  
SPM 55  
RPM 75

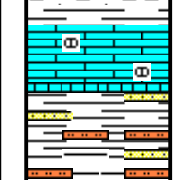
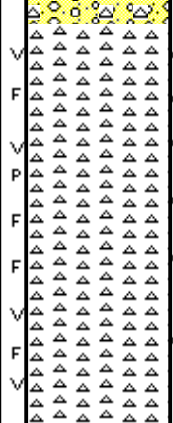
CFS. at 4855' RTD.

Vis 62  
Wt. 9.2  
LCM 2#

4800

4850

4900



**MISS. CHERT 4790(-2567)**

CHT; wh, occ transl, fresh with interbdd tripolite, occ well dev. vug por, gas bubbles, fracs w/edge stn, most w/even lt brn oil stn, SFO, faint to fair odor, med to brite yel fluor

CHT; wh, off wh, fresh w/interbdd tripolite, scat fair vug por w/SFO, occ p-p por, 60% with brite yel fluor, fair odor, some barren wh fresh cht

CHT; wh, pred fresh, spotted live oil staining, still much brite yel fluor, fracs

**DST #4: Miss. Chert 4759' - 4819'**  
**Corrected Depths to Log**

CHT; wh, off wh, most fresh, scat vug por w/v. spotted lt brn stn, no odor, decr. shows, some varic cht, grn, foss ip, hd

LM; med brn, some rust red - oxidized ip, occ nodular, most dense

**KINDERHOOK SHALE 4841(-2618)**

SH; med gy grn, med gy, silty to sandy, occ strngs of grn sltst and vf gr ss

RTD. 4855' at 7:30 PM. on 7/11/14

LTD. 4850'

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

**NOTE: This log was shifted upward by 3' to 5' for correlation purposes with the Halliburton Logs.**

MAX. 550  
Unit Incr.  
SHOW

